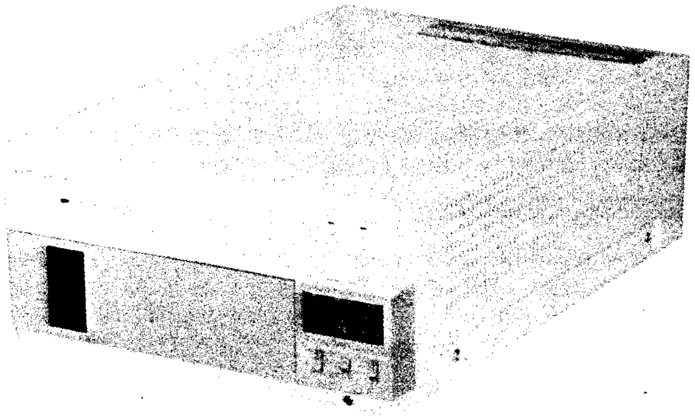
MARCH 1991

MITSUBISHI

Service Manual

VIDEO COPY PROCESSOR



MODEL

P68E

CAUTION

Before servicing this product, it is important that the serviceman reads the "SAFETY PRECAUTIONS" and "PRODUCT SAFETY NOTICE" in this service manual.

SPECIFICATIONS

• Power Input	AC 220V/240V 50Hz
• Power Consumption	110W (MAX)
• Composite Video Signal Input	1Vp-p
• RGB TTL Signal Input	TTL level
• Parallel Data Interface	TTL level
• Print size	100mm×75mm (3-15/60"×2-15/16")
• Print speed	11 sec/picture
• Gray scale	High grade 64 tones
• Synchronization	Horizontal: 15kHz~35kHz (Automatically) Vertical: 45Hz~75Hz (Automatically)
• Resolution	Composite Video Signal Input Field mode 640 dots×289 lines Frame mode 640 dots×512 lines
• Cabinet Dimensions	250mm(W)×125mm(H)×374mm(D) 9-27/32"(W)×4-15/16"(H)×14-23/32"(D)
• Weight	7.0kg (15.4lbs)

FEATURES

- Positive/Negative print selection
- Direction Selector
- Selectable contrast
- Wired remote control
- Automatic tracking of wide range horizontal and vertical scanning frequencies.
- Auto cutter

MITSUBISHI ELECTRIC CORPORATION

SAFETY PRECAUTIONS

NOTICE. Observe all cautions and safety related notes located inside the receiver cabinet and on the receiver chassis.

LEAKAGE CURRENT CHECK

Before returning the receiver to the customer, it is recommended that leakage current be measured according to the following methods.

Cold Check

With the AC plug removed from the Power source, place a jumper across the two AC plug prongs. Turn the receiver AC switch on. Using an ohm-meter, connect one lead to the jumped AC plug and touch the other lead to each exposed metal part (antennas, handle bracket, metal cabinet, screwheads, metal overlays, control shafts, etc.), particularly any exposed metal part having a return path to the chassis. Exposed metal parts having a return path to the chassis should have a minimum resistance reading of 1 megohm. Any resistance below this value indicates an abnormality which requires corrective action. Exposed metal parts not having a return path to the chassis will indicate an open circuit.

PRODUCT SAFETY NOTICE

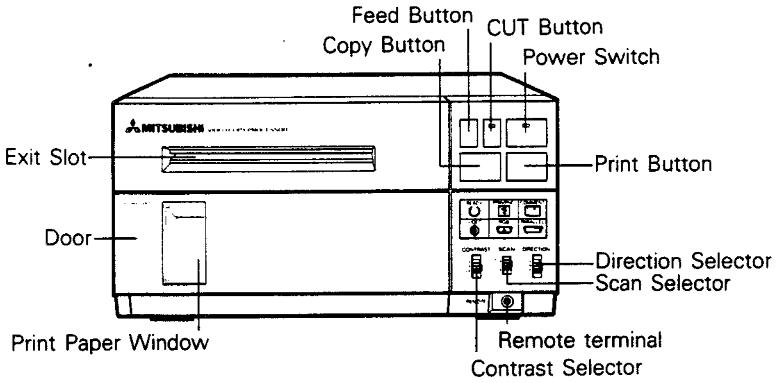
Many electrical and mechanical parts in video copy processor have special safety related characteristics.

These characteristics are often not evident from visual inspection nor can the protection afforded by them necessarity be obtained by using replacement components rated for higher voltage, wattage, etc.

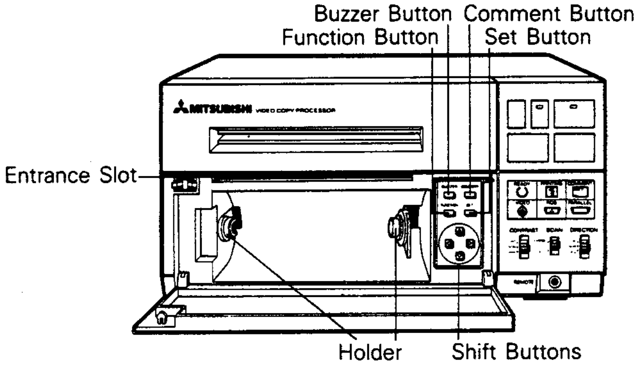
Replacement parts which have these special safety characteristics are identified in this service manual.

Electrical components having such features are identified by shading on the schematic diagram and the parts list of this service manual and by marking on the supplementary sheet for this chassis to be issued subsequently. Therefore replacements for any safety parts should be identical in value and characteristics.

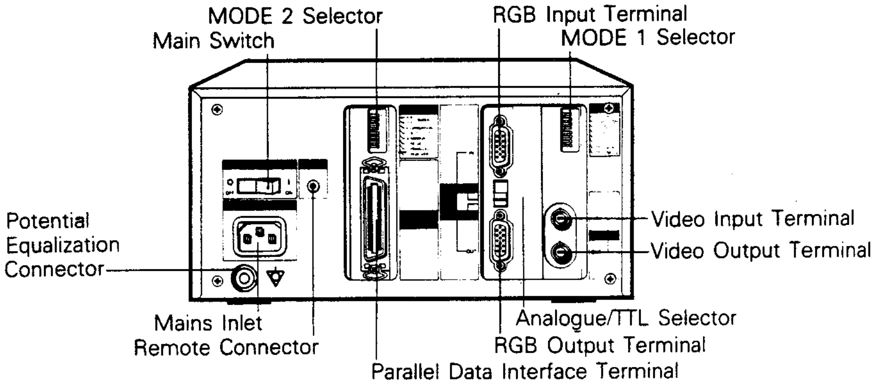
FRONT PANEL CONTROLS


Feed Button
CUT Button
Copy Button
Power Switch
Exit Slot
Print Button
Door
Direction Selector
Scan Selector
Print Paper Window
Remote terminal
Contrast Selector

INSIDE PANEL CONTROLS


Buzzer Button
Comment Button
Function Button
Set Button
Entrance Slot
Holder
Shift Buttons

REAR PANEL TERMINOLOGY


MODE 2 Selector
Main Switch
RGB Input Terminal
MODE 1 Selector
Potential Equalization Connector
Video Input Terminal
Video Output Terminal
Mains Inlet
Remote Connector
Analogue/TTL Selector
RGB Output Terminal
Parallel Data Interface Terminal

SPECIFICATIONS FOR INPUT SIGNALS

1. COMPOSITE VIDEO SIGNAL

STANDARD (PAL/SECAM/NTSC) COMPOSITE VIDEO SIGNAL

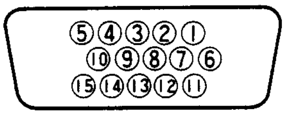
1)	Input Level	1V p-p (input terminal)
2)	Input Impedance	75Ω
3)	Connector	BNC type

2. RGB TTL/ANALOG SIGNAL

R.G.B.I HD · VD SEPARATE VIDEO SIGNAL

1)	Input Level	ANALOGUE 0.7 Vp-p/TTL		
2)	Input Impeadance	ANALOGUE-VIDEO 75Ω	TTL-VIDEO 470Ω	SYNC. 1kΩ
3)	Connector	D-SUB Mini 15 Pin		

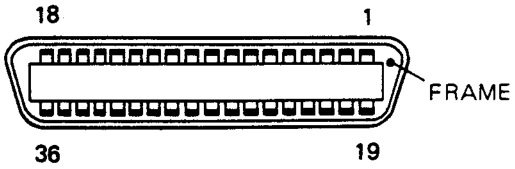
RGB IN RGB OUT



Pin #	ANALOGUE (IBM® PS/2, APPLE® Mac II or other Analogue PCs)	TTL			
		M1: OFF M2: ON (EGA)	(CGA)	M1, M2: OFF (MDA)	M1, M2: ON (None of LEFT)
1	R Video				
2	G Video (Sync on G available)				
3	B Video				
4	reserved	B	B		B
5	reserved	r			
6	GND (R)				
7	GND (G)				
8	GND (B)				
9	GND (Sync)	GND	GND		
10	GND (Sync)	g		Video	
11	reserved	G	G		G
12	reserved	R	R		R
13	HS/CS/$\overline{\text{Hs}}$/$\overline{\text{Cs}}$	Hs	Hs	Hs/$\overline{\text{Hs}}$	Hs/$\overline{\text{Hs}}$
14	VS/$\overline{\text{Vs}}$	$\overline{\text{Vs}}$	Vs	Vs/$\overline{\text{Vs}}$	Vs/$\overline{\text{Vs}}$
15	reserved	b	I	Intensity	I

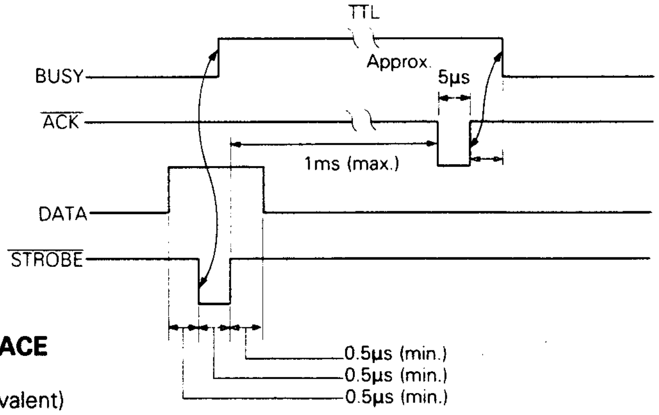
3. PARALLEL DATA SIGNAL (According to CENTRONICS® Interface)

1)
- Input Level: TTL
- Connector: JD-36SL or equivalent



- Mode Types:
  - Character Mode
  - Line Scan Graphic Mode
  - 16-Gradation Dot Graphic Mode
  - 2-Gradation Dot Graphic Mode

4. PARALLEL INTERFACE TIMING



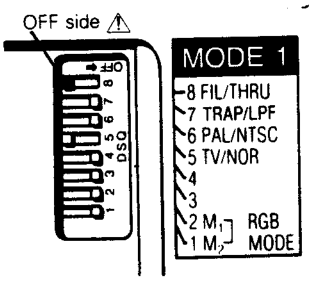
STANDARD PARALLEL INTERFACE

❶ Input Connector
Plug 57-30360 (AMPHENOL Equivalent)
❷ Input Connector Signal Assignment

Pin No.	Pin No. Return Side	Signal	Signal Source	Function
❶	19	$\overline{\text{STROBE}}$	Computer	Strobe pulse for the data reading. Pulse width: over 0.5µs Normal "High" Data Reading "Low"
❷ ❸ ❹ ❺ ❻ ❼ ❽ ❾	20 21 22 23 24 25 26 27	DATA 1 DATA 2 DATA 3 DATA 4 DATA 5 DATA 6 DATA 7 DATA 8	Computer Computer Computer Computer Computer Computer Computer Computer	Each signal indicates the information of the parallel data from 1 bit till 8 bit. High – Data 1 Low – Data 0
❿	28	$\overline{\text{ACK}}$	Video Copy Processor	Low indicates that the printer received the data and is ready to receive the next data.
⓫	29	BUSY	Video Copy Processor	High signifies that the Video Copy Processor can not accept the data. Low indicates that the Video Copy Processor can accept the data. In the next case, this signal will be changed to High. 1 While the data is entered. 2 While printing is on. 3 While paper is being fed. 4 PE is "HIGH" condition or "SELECT" is "LOW" conditon. 5 While $\overline{\text{ERROR}}$ is "LOW" condition.
⓬		P · E	"	Paper supply Low: available High: Not avaiable
⓭		SELECT	Video Copy Processor	It's possible to "SELECT" or "DESELECT" with DC1/DC3 controls. It's "SELECT" condition at "HIGH".
⓮, ⓯		NC		Unused
⓰, ⓱		GND		GND
⓲		NC		Unused
⓳~㉚		GND		GND level signal for Twist Pair Return.
㉛		NC		Unused
㉜		$\overline{\text{ERROR}}$	Video Copy Processor	"LOW"; when the Video Copy Processor is at "ERROR" due to the following: <1> No-paper conditions <2> Off-line conditions <3> Over-heat or humidity accumulation on the Thermal-Head. <4> "PAPER JAMMED" conditions
㉝		GND		GND level signal for Twist Pair Return.
㉞~㊱		NC		Unused

7. MODE SWITCH FUNCTIONS

1. MODE 1



BIT	ABB.	FUNCTION
❽	FIL/THRU	TRAP FILTER/THRU selector
❼	TRAP/LPF	FILTER selector
❻	PAL/NTSC	PAL/NTSC signal selector
❺	TV/NOR	SYNCHRO CIRCUIT selector
❹	—	Unused
❸	—	Unused
❷	M_1 RGB MODE	MANUAL/AUTO selector
❶	M_2	COLOUR/MONO selelctor

SWITCHES FUNCTIONS

❶ M_2 ❷ M_1

- The input mode setting of the RGB/TTL analog signal can be made by setting bits ❶ and ❷.
- Set the specifications of the signal fed from the connected device as in the table hereunder.

Computer/Graphic board	ANALOG/TTL Selector	M_1	M_2
IBM® Monochrome Display/Adapter	TTL	OFF	OFF
IBM® EGA/CGA	TTL	OFF	ON
IBM® MCGA/VGA (PS/2)	ANALOG	OFF	OFF
IBM PGC or Apple® MACII	ANALOG	ON	—
None of above	Confirm the signal type and select ANALOG or TTL	—	—

❺ MODE SWITCH FUNCTIONS

Set the Synchro circuit mode selection to "NOR" position for normal use. If the electric signal is weak or noise is significant, set it to "TV" position. When VTR is to be used, set it to "TV".

MODE	FUNCTION
NOR	fH: 15 ~ 35kHz fV: 45 ~ 80Hz
TV	fH: 15.75kHz (vicinity only) Conformable to withstand noise, weak broadcasting, and VTR signals.

❻ PAL/NTSC

Select PAL or NTSC, in accordance with the input signal.

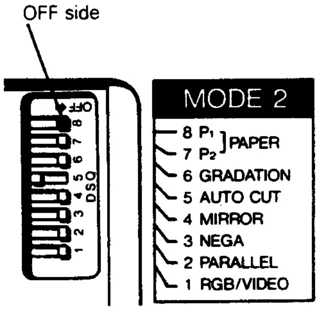
❼ TRAP/COMB ❽ FIL/THRU

A filter can be selected via the settings of bits. ❻,❼ and ❽.

MODE 1 SWITCH FUNCTION			SELECTION
8	7	6	
THRU	—	—	Filter will not act.
FIL	LPF	—	Low PASS-Filter
FIL	TRAP	PAL	PAL (4.43MHz) TRAP ON
FIL	TRAP	NTSC	NTSC (3.58MHz) TRAP ON

- However, if "DIRECT ON" has been selected at the menu of STEP 1, this setting will be rendered ineffective, and the filter cannot be used.

2. MODE 2



[illegible]	[illegible]	[illegible]
❽	P_1 PAPER	Paper selection
❼	P_2 PAPER	Paper selection
❻	GRADATION	Gradation ON/OFF
❺	AUTO CUT	Automatic cutting ON/OFF
❹	MIRROR	Mirror printing ON/OFF
❸	NEGA	Negative/Positive printing selection
❷	PARALLEL	Parallel Input/Composite Video, RGB selection
❶	RGB/VIDEO	Composite Video, RGB input selection

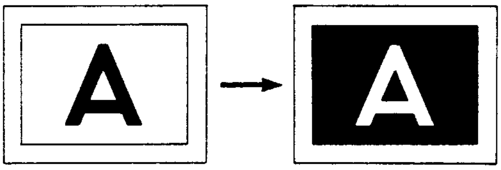
SWITCHES FUNCTIONS

❶ RGB/VIDEO ❷ PARALLEL

- The input signal, whether Composite Video, RGB Analog or Parallel Data Interphase, is determined by setting Bits ❶ and ❷.

INPUT SIGNAL	❶	❷
RGB (TTL.ANALOG)	RGB side (ON)	PARALLEL OFF side
Composite video	VIDEO side (OFF)	PARALLEL OFF side
Parallel	—	PARALLEL ON side

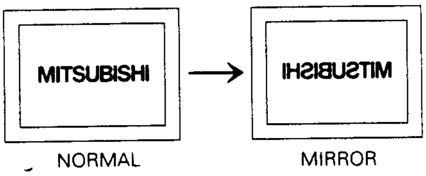
❸ NEGA



NORMAL NEGATIVE

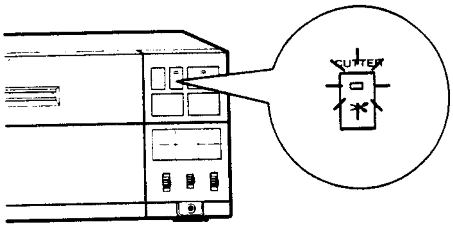
- If it is set at ON position, black/white print-out in reverse to the picture displayed can be made.
- Keep it set at OFF position to carry out normal picture print outs.

❹ MIRROR


MITSUBISHI
NORMAL
MIRROR

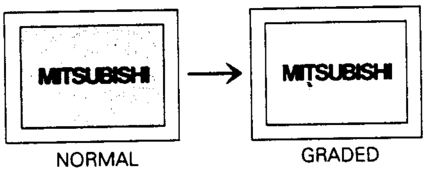
- In the ON position mirror image print outs can be made as in the left hand figure.
- Keep it set at OFF position to carry out normal picture print-outs.

❺ AUTO CUT

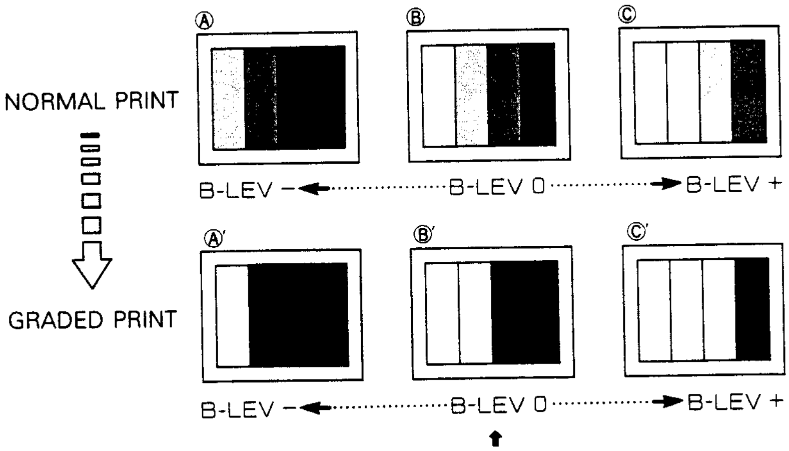


- If it is kept set at ON, the paper will be cut after printing has ended. When it is set at ON, the front panel's green CUT button lights.
- If it is kept OFF , automatic cutting will not be possible. To cut the thermo paper, press CUT button located on the front panel.

❻ GRADATION


MITSUBISHI
MITSUBISHI
NORMAL
GRADED

- If it is kept set at ON , graded print-out (back/white with no mid-tones) can be made.
- For normal print-outs, keep it set at OFF position.
- For composite video and RGB analog signals, if the B-LEV digital values are changed, it would be possible to change the gradation standard level.


Ⓐ
Ⓑ
Ⓒ
NORMAL PRINT
B-LEV −
B-LEV 0
B-LEV +
Ⓐ'
Ⓑ'
Ⓒ'
GRADED PRINT
B-LEV −
B-LEV 0
B-LEV +

50% position of the picture signal.

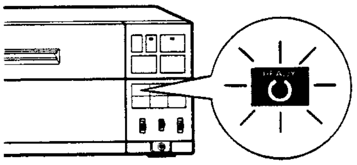
- For RGB (TTL), black level will be defined when the input G signal is at H (high) and the WHITE level is at L (low).

❼ P_2 ❽ P_1 PAPER

- Set in accordance with the type of registration paper being used.

SWITCH		TYPE OF PAPER
P1	P2	
OFF	OFF	K-61S
ON	OFF	K-60N
ON	ON	K-65H/K-65HM

SYMPTOM 1. IN CASE OF CONDENSATION

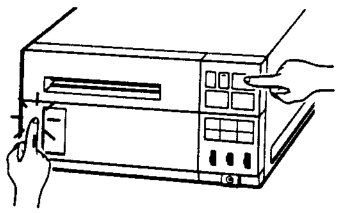


- If the buzzer sounds and the READY indicator blinks after the PRINT or COPY button is pressed, the paper is jammed, In this case, stop pressing PRINT, COPY or FEED button, and follow the procedures.

A. OVERCOMING PAPER JAM PROCEDURES

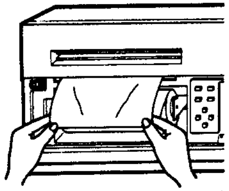
- IF THE PAPER IS JAMMED, FOLLOW THE PROCEDURES HEREUNDER TO REMOVE THE PAPER.

1 TURN OFF THE POWER OPEN THE DOOR



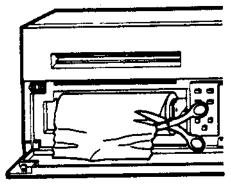
① Press the POWER button.
② Press on the upper left part of the panel. The door will open.

2 REMOVE THE PAPER



- Pull or remove the thermal paper in a straight direction from the paper roll insertion inlet side.
- At that time, if the power source has not been turned off, AUTO-LOADING process will be activated and the paper will be pulled back.

3 CUT THE PAPER



- Cut off the damaged portion of the paper.

4 RE-FIT THE PAPER

After completing the above steps, reset the paper in accordance with the instructions of "HOW TO INSTALL THE PAPER" on pages 11~12.

B. CAUSES OF PAPER JAMS

- **Note the elements stated hereunder can easily produce paper jammings.**
  ① If the paper is pulled out or pressed during the printing or copying process.
  ② If the paper has been inserted in an oblique direction.
  ③ If wrinkled or pleated paper has been inserted.

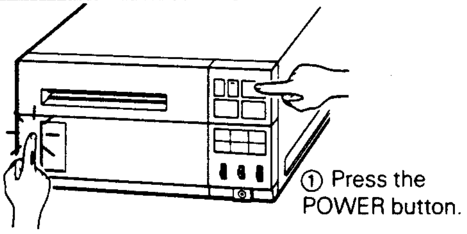
HOW TO INSTALL THE PAPER

One roll of thermal paper is provided in the carton box.
The thermal-head should be cleaned with the cleaning-sheet once for every 10 rolls
Humidity, finger print, dust, etc. on the high density paper may deteriorate the printing quality or cause a noise at printing.

Ⓐ Take care not to expose high density paper to finger print, dust, humidity, etc.
Ⓑ A finger print, or dust, adheres to the high density paper surface when the paper is loaded. So load the paper as follows.

TURN ON THE MAIN SWITCH AT THE REAR PANEL

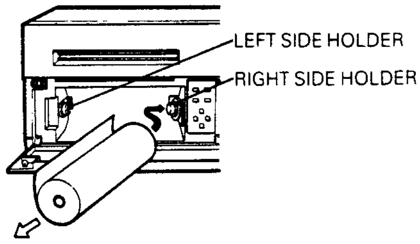
1 TURN THE POWER SOURCE ON AND OPEN THE DOOR



① Press the POWER button.

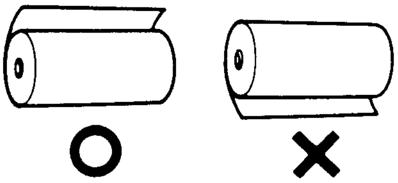
② Press on the upper left part of the panel. The door will open.

2 SET THE PAPER

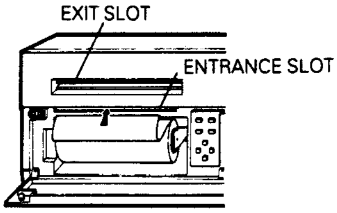


① Insert the roll of the paper onto the right side holder.
② As you push the roll to the right, fit the other side of the roll onto the left holder.
Insert the other side of the roll onto the left side holder pushing the roller to the right.

Note: The print side of the paper is rolled to the outside, Make sure the paper is installed as shown in the figure.

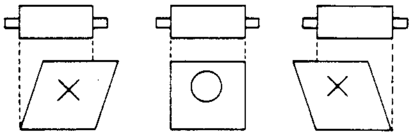


3 INSERT THE PAPER



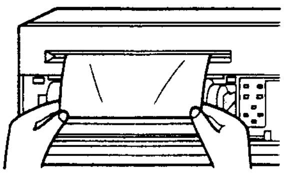
① Insert the end of the paper into the ENTRANCE SLOT.

② Upon inserting the paper, the paper will advance automatically. In case the paper does not advance automatically, press the feed button to insert the paper.



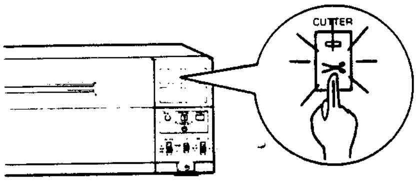
③ When the paper is obliquely ejected from the paper exit, adjust so that the paper is parallel at the paper inlet and exit.

4 DRAW OUT THE PAPER



① Draw out the end of the paper (approx. 30cm) by hand from the EXIT SLOT and then close the FRONT DOOR.
Note: Draw out the paper by hand without pressing the FEED button.

5 CUT THE PAPER

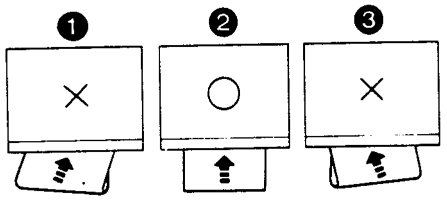


- Cut the paper by pressing the CUTTER button on the front panel.
  When the cut button is turned on, the ready lamp lights and printing and copying is possible.
- Automatic paper cutting is also possible.

CAUTIONS ON INSERTING PAPER

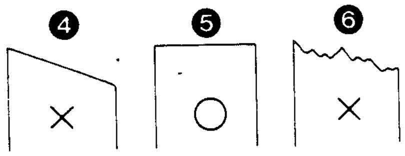
- KEEP THE FOLLOWING POINTS IN MIND TO PREVENT THE PAPER BEING JAMMED ON INSERTION.

A. INSERT IN A STRAIGHT LINE



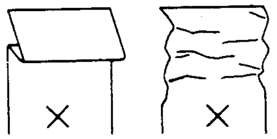
- When paper is inserted into the entrance slot the paper (as shown in ❷ of the left figure) should be parallel with the sides of the unit.
  Inserting the paper obliquely as shown in the figures ❶ · ❸ may cause jamming.

B. TIP END SHOULD BE AT RIGHT ANGLES TO THE SIDES



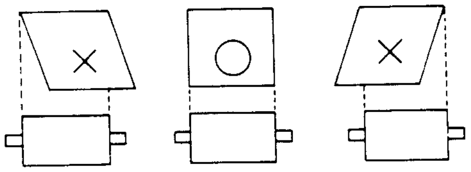
- The print paper should be cut square to the direction of paper feed as shown in the figure ❺.
  Paper jamming may occur easily when the tip end is oblique or irregular - as shown in the figure ❹ or ❻.

C. AVOID USING WRINKLED OR PLEATED PAPER



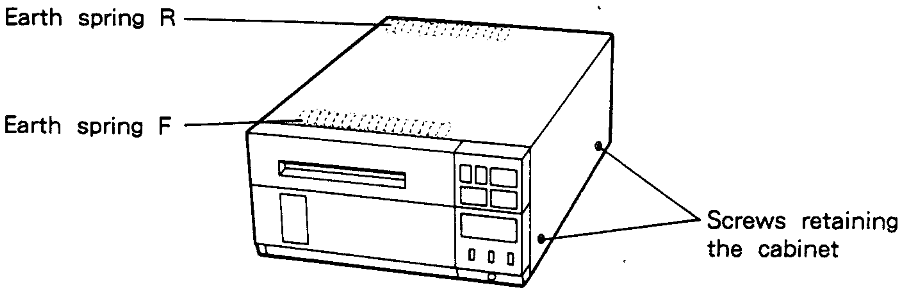
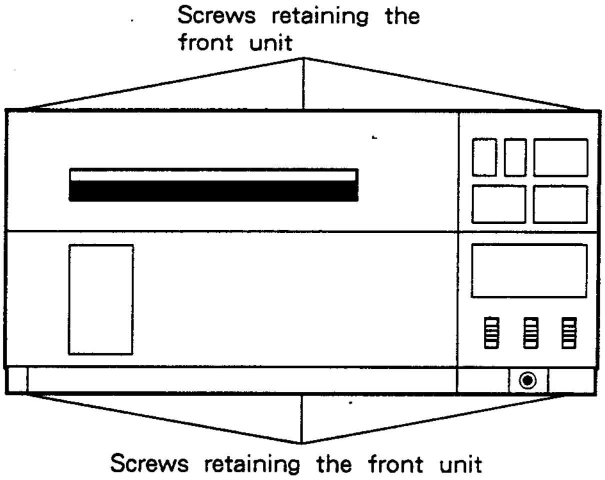
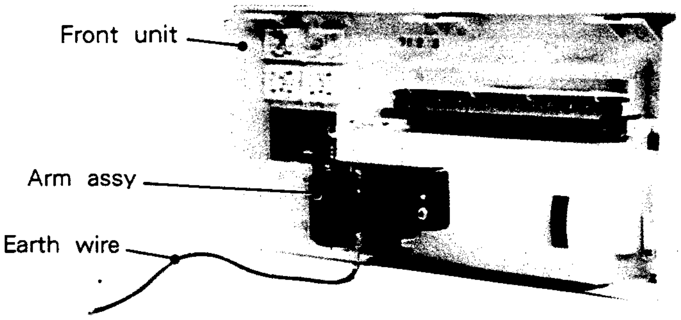
- Do not insert pleated, wrinkled, or soiled paper.

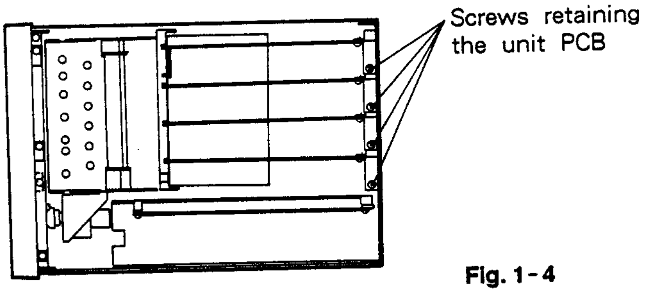
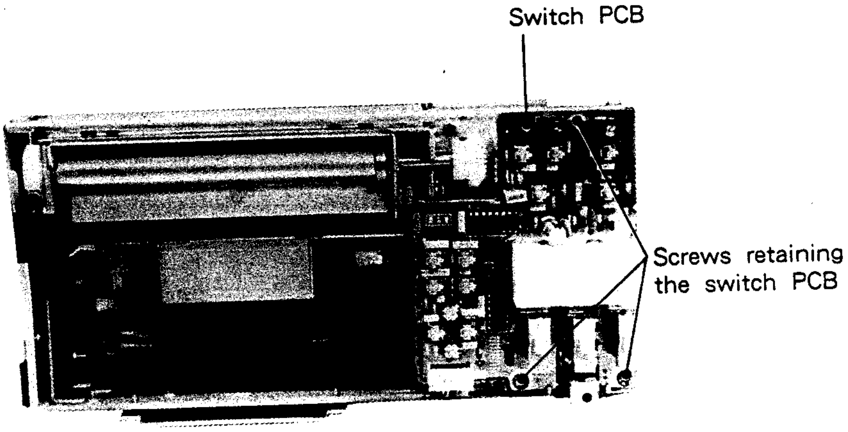
D. CHECK TO SEE IF THE PAPER IS PARALLEL



- Printing while the paper is not parallel with the roller may cause the paper edge to touch the wall, thus resulting in wrinkled paper.

DISASSEMBLY PROCEDURE

Removal of Cabinet	1. Remove 4 screws (2 on each side) securing the cabinet.(Fig. 1-1) 2. Slide the cabinet slightly backward and remove it. (Note) Be careful not to hit against the earth spring F (Front) and R (Rear).  Earth spring R Earth spring F Screws retaining the cabinet **Fig. 1-1**
Remove of Front unit	1. Remove the cabinet. (Fig. 1-1) 2. Remove screws retaining the front unit. (Fig. 1-2) 3. Remove 3 snaps on the upper side and remove the front unit to your side. 4. Disconnect the earth wire connected to the arm assy in back of the front unit. (Fig. 1-3) 5. For re-assembly, reverse the procedure.  Screws retaining the front unit Screws retaining the front unit **Fig. 1-2**  Front unit Arm assy Earth wire **Fig. 1-3**

PCB: VIDEO RGB RAM CPU MOTHER **Removal of PCB unit (video PCB) (RGB PCB) (RAM PCB) (CPU PCB) (mother PCB)**	1. As shown in Fig. 1-4, remove 4 screws retaining the PCB unit. 2. Raise the PCB unit from the chassis. 3. To inspect the rear side (foil side) of the mother PCB, remove 2 screws retaining the mother PCB, and 8 screws retaining the connectors.  Screws retaining the unit PCB Fig. 1-4
Remove of Switch PCB	1. Remove the cabinet.(Fig. 1-1) 2. Remove the front unit .(Fig. 1-2) 3. Remove screws retaining the switch PCB.(Fig. 1-5) 4. Disconnect the connectors RJ and SW connected to the switch PCB. 5. When re-assembling, reverse the procedure.  Switch PCB Screws retaining the switch PCB Fig. 1-5

Removal of power unit

1. Remove 4 screws retaining the step-motor-bracket .(Fig. 1-6)

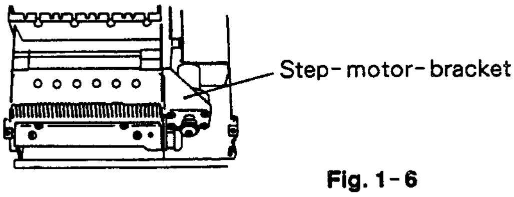

Step-motor-bracket

Fig. 1-6

2. Remove 4 screws retaining the rear panel (Fig.1-7), and 2 screws retaining the power unit.(Fig.1-8)

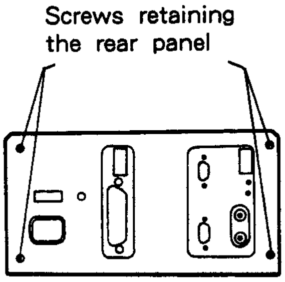

Screws retaining
the rear panel

Fig. 1-7

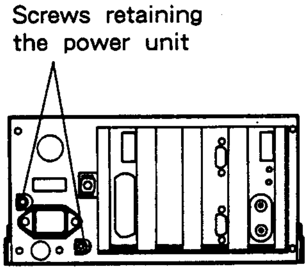
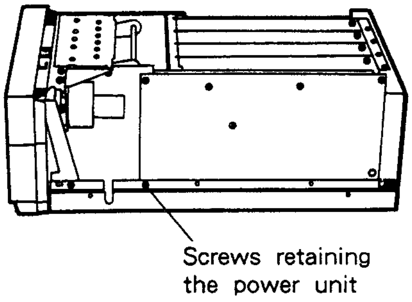

Screws retaining
the power unit

Fig. 1-8

3. Unscrew one right screw retaining the power unit.(Fig. 1-9) Raise and turn the power unit to remove the unit from the chassis.


Screws retaining
the power unit

DISASSEMBLY PROCEDURE(PRINTER UNIT)

Removal of Cabinet

1. Remove 4 screws (2 on each side) securing the cabinet.(Fig. 2-1)
2. Slide the cabinet slightly backward and remove it.
   (Note) Be careful not to hit against the earth spring F (Front) and R (Rear).

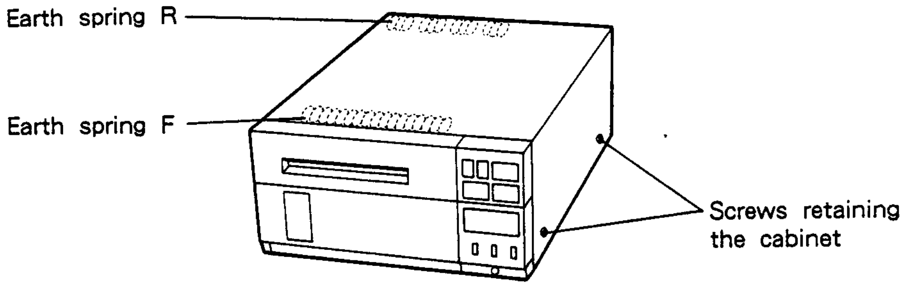

Earth spring R
Earth spring F
Screws retaining the cabinet

Fig. 2-1

Remove of Front unit

1. Remove the cabinet. (Fig. 2-1)
2. Remove screws retaining the front unit. (Fig. 2-2)
3. Remove 3 snaps on the upper side and remove the front unit to your side.
4. Disconnect the earth wire connected to the arm assy in back of the front unit. (Fig. 2-3)
5. For re-assembly, reverse the procedure.

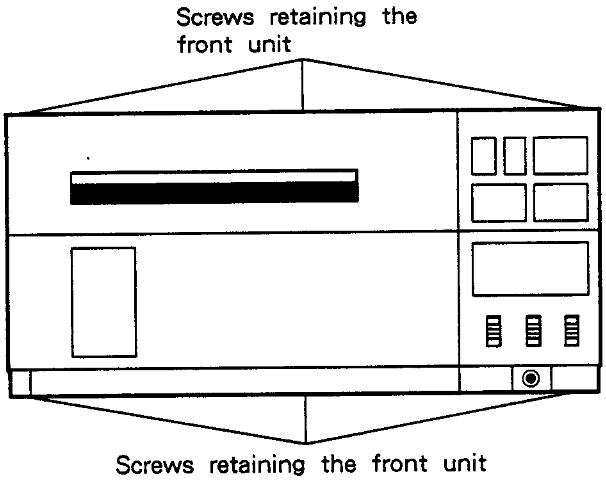

Screws retaining the front unit
Screws retaining the front unit

Fig. 2-2

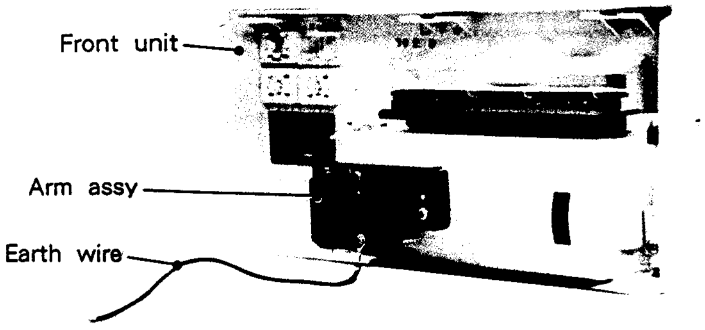

Front unit
Arm assy
Earth wire

Fig. 2-3

Removal of Switch PCB

1. Remove the cabinet. (Fig. 2-1)
2. Remove the front unit. (Fig. 2-2)
3. Remove screws retaining the switch PCB. (Fig. 2-4)
4. Disconnect the connectors RJ and SW connected to the switch PCB.
5. When re-assembling, reverse the procedure.

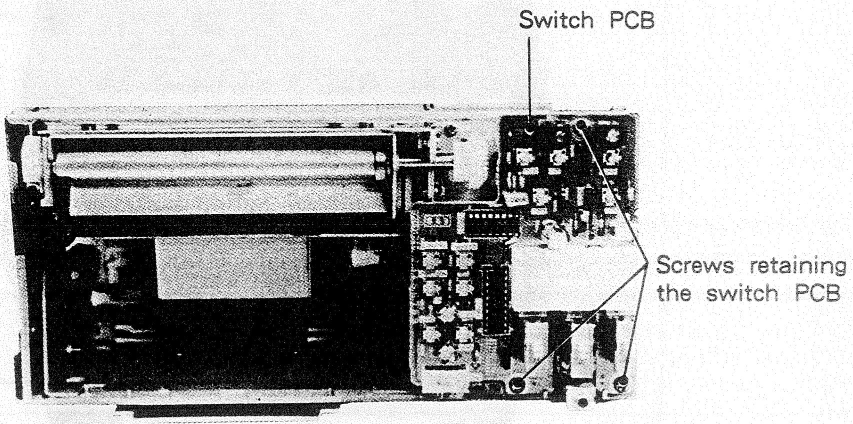

Switch PCB
Screws retaining the switch PCB

Fig. 2-4

Removal of Printer assembly

1. Remove the cabinet. (Fig. 2-1)
2. Remove the front unit. (Fig. 2-2)
3. Remove the switch PCB. (Fig. 2-4)
4. Disconnect the connectors M1 ; M2 , M3 , MS connected to CPU PCB.
5. Disconnect the connector PH connected to power PCB.
6. Disconnect the connectors RM and RN connected to RAM PCB.
7. Remove the front bracket and stay. (Fig. 2-5)
8. Remove the clamper FM . (Fig. 2-5)
9. Remove screws retaining the printer unit. (Fig. 2-5)

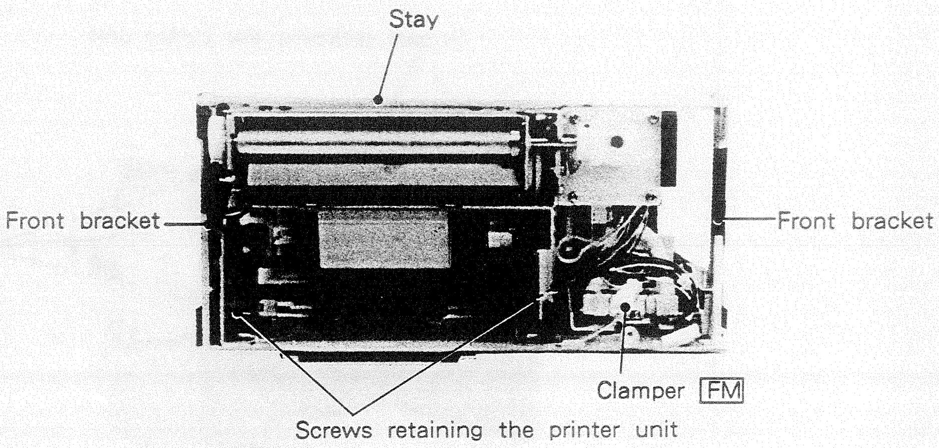

Stay
Front bracket
Front bracket
Clamper FM
Screws retaining the printer unit

Fig. 2-5

Removal of Printer assy

10. Remove screws retaining the printer base. (Fig. 2-6)
11. Slide the printer assy to your side and remove it.
12. When re-assembling, reverse the procedure.

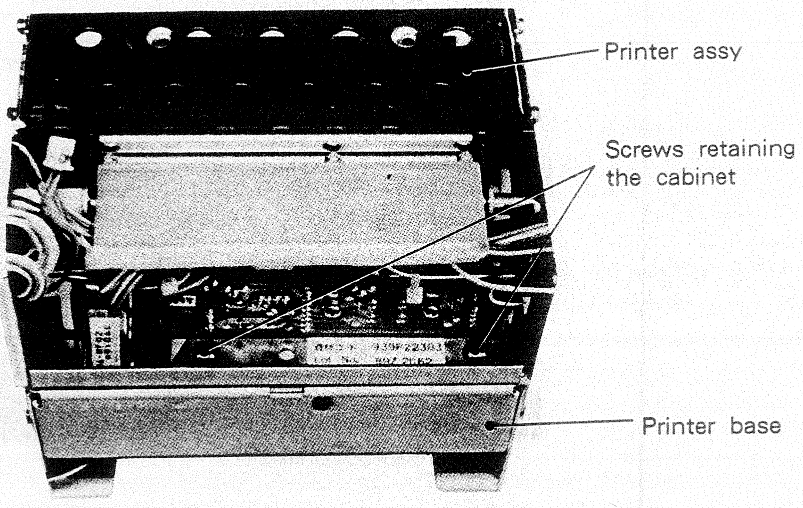

Printer assy
Screws retaining the cabinet
Printer base

Fig. 2-6

Removal of Cutter unit

1. Remove the cabinet. (Fig. 2-1)
2. Remove the front unit. (Fig. 2-2)
3. Remove the switch PCB. (Fig. 2-4)
4. Remove the printer unit. (Fig. 2-5)
5. Remove the connector CS connected to the sensor PCB inside the printer assembly.
6. Remove 5 screws (2 on front, 3 on right side) retaining the cutter unit. (Fig. 2-7)
7. When re-assembling, reverse the procedure.

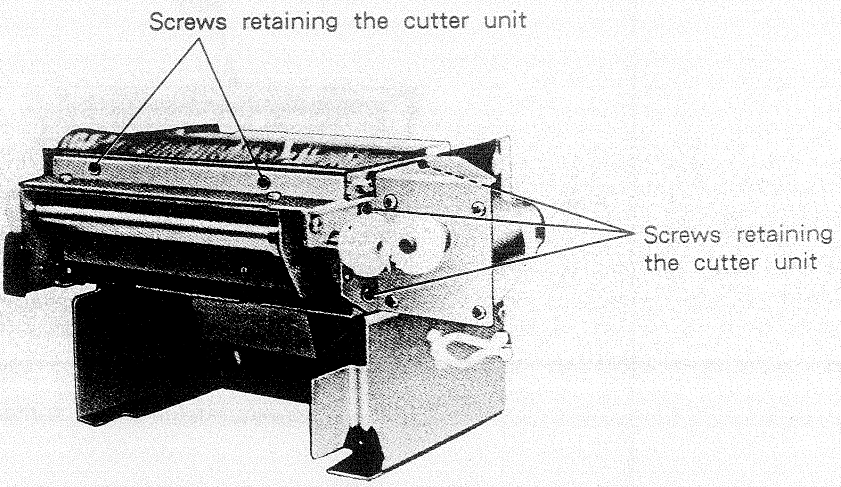
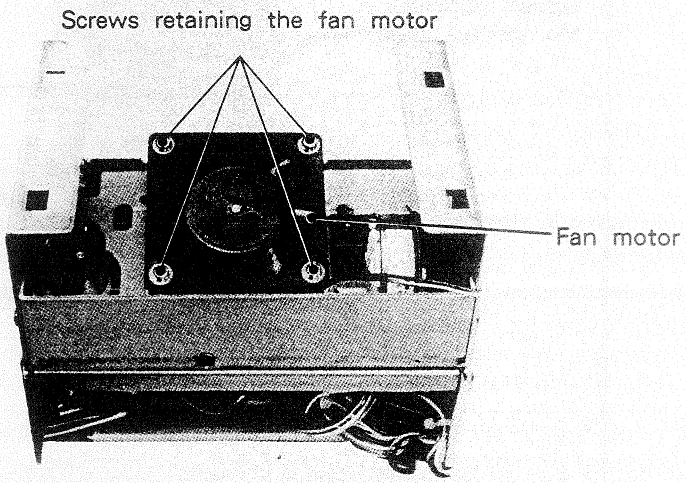
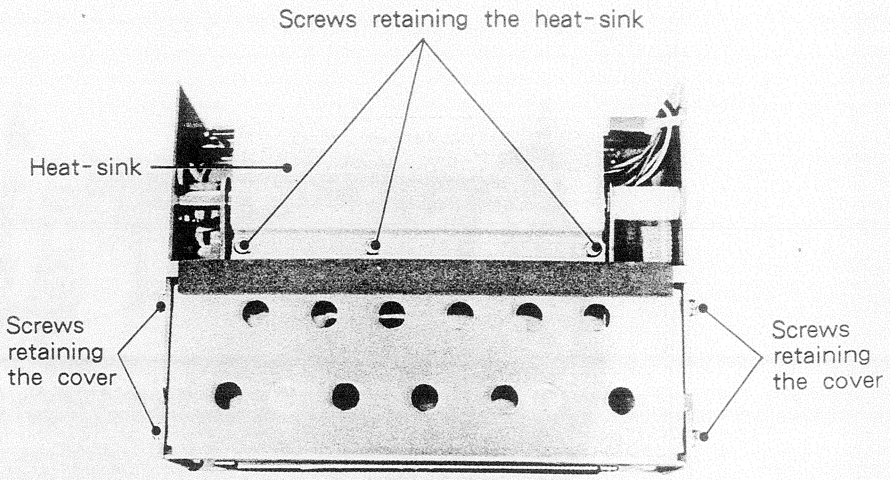

Screws retaining the cutter unit
Screws retaining the cutter unit

Fig. 2-7

Removal of Fan motor	1. Remove the cabinet. (Fig. 2-1) 2. Remove the front unit. (Fig. 2-2) 3. Remove the switch PCB. (Fig. 2-4) 4. Remove the printer unit. (Fig. 2-5) 5. Remove screws retaining the fan motor. (Fig. 2-8) 6. For re-assembly, reverse the procedure.  Screws retaining the fan motor Fan motor Fig. 2-8
Replacement of Thermal head	1. Remove the cabinet. (Fig. 2-1) 2. Remove the front unit. (Fig. 2-2) 3. Remove the switch PCB. (Fig. 2-4) 4. Remove the printer unit. (Fig. 2-5) 5. Remove the cutter unit. (Fig. 2-7) 6. Remove screws retaining the cover. (Fig. 2-9) (Note) Be careful as the H spring is pushing up the cover. 7. Remove the heat-sink. (Fig. 2-9)  Screws retaining the heat-sink Heat-sink Screws retaining the cover Screws retaining the cover Fig. 2-9

Replacement of Thermal head

8. Disconnect the connectors connected to the thermal head.
9. Hold up the thermal head and remove screws retaining the thermal head. (Fig. 2-10)

   (Note) Be careful not to touch or damage the heat generating part of the thermal head. (Fig. 2-11)

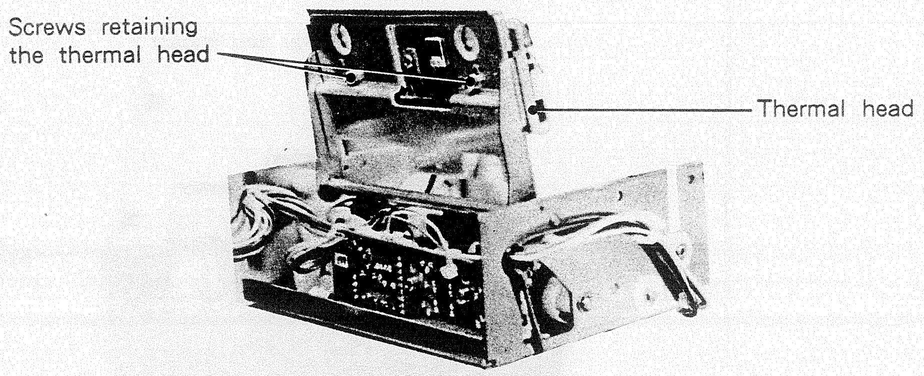

Screws retaining the thermal head
Thermal head

Fig. 2-10

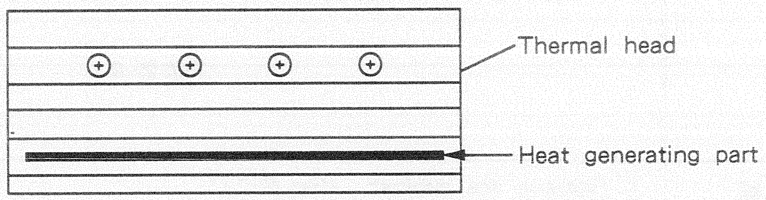

Thermal head
Heat generating part

Fig. 2-11

10. For re-assembly, reverse the procedure.

    (Note)

    - Before fixing the thermal head with screws, insert the gauge bar (549D133010) in 2 holes and after confirming that the gauge bar can be drawn out, tighten the screws. (Fig. 2-12)

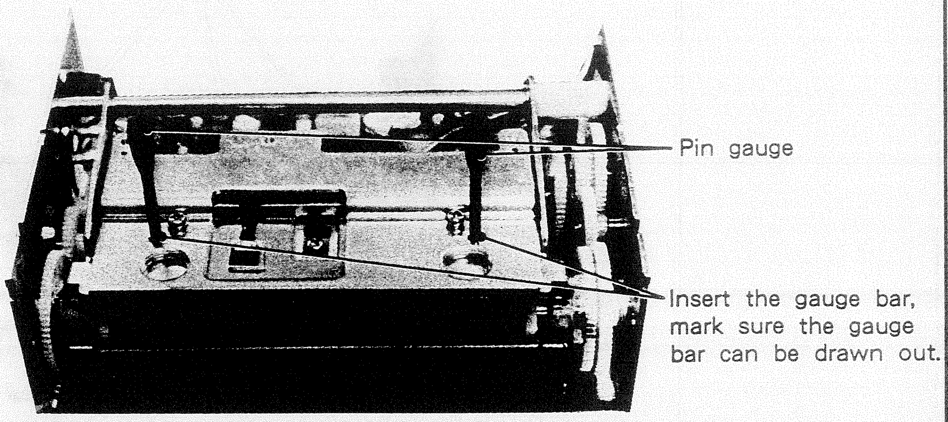
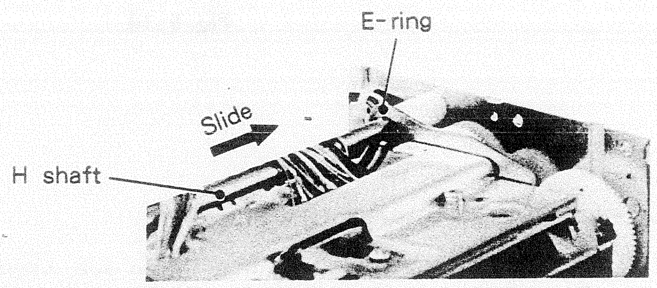

Pin gauge
Insert the gauge bar, mark sure the gauge bar can be drawn out.

Fig. 2-12

Replacement of Thermal head	● Be sure to connect the connectors to be connected to the thermal head. Otherwise, trouble of the thermal head may be caused. * After completing the assembly, be sure to perform "Adjustment of Head Voltage" in Page 38 and check for normal printing.
Removal of the Head bracket	1. Remove the cabinet. (Fig. 2-1) 2. Remove the front unit. (Fig. 2-2) 3. Remove the switch PCB. (Fig. 2-4) 4. Remove the printer unit. (Fig. 2-5) 5. Remove the cutter unit. (Fig. 2-7) 6. Remove screws retaining the cover. (Fig. 2-9) (Note) Be careful as the H spring is holding up the cover. 7. Remove the heat-sink . (Fig. 2-9) 8. Disconnect the connectors connected to the thermal head. 9. Remove the E-ring attaching the H shaft . (Fig. 2-13) 10. Slide the H shaft rightward and remove it. (Fig. 2-13) 11. For re-assembly, reverse the procedure.  **Fig. 2-13**
Replacement of Platen roller	1. Remove the cabinet. (Fig. 2-1) 2. Remove the front unit. (Fig. 2-2) 3. Remove the switch PCB. (Fig. 2-4) 4. Remove the printer unit. (Fig. 2-5) 5. Remove the cutter unit. (Fig. 2-7) 6. Remove screws retaining the cover. (Fig. 2-9) (Note) Be careful as the H spring is holding up the cover. 7. Remove the heat-sink . (Fig. 2-9) 8. Disconnect the connectors connected to the thermal head.

Replacement of Platen roller

9. Remove the head bracket.
10. Remove the E-rings (both sides) retaining the platen roller. (Fig. 2-14)
11. Remove the bushings (both sides). (Fig. 2-14)
12. Remove the cam (L), cam (R) and the A-gear. (Fig. 2-14)
13. Remove the guide sub. (Fig. 2-14)

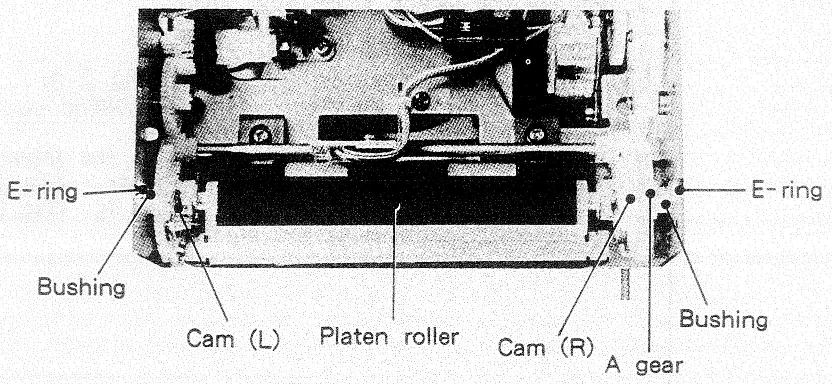
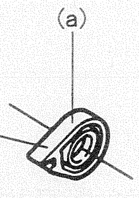

E-ring
Bushing
Cam (L)
Platen roller
Cam (R)
A gear
Bushing
E-ring

Fig. 2-14

14. For re-assembly, reverse the procedure.
    (Note)
    a. Be careful with the direction of guide sub when attaching. (Fig. 2-15)
    b. Be careful not to mistake the cam (L) and cam (R).
    c. Use the jig for positioning the platen sensor when assembling. (P. 25)



Set cam (L) and (R)
so that flat side (a)
come to be up side.

Fig. 2-15

Removal of Paper guide assy

1. Remove the cabinet. (Fig. 2-1)
2. Remove the front unit. (Fig. 2-2)
3. Remove the switch PCB. (Fig. 2-4)
4. Remove the printer unit. (Fig. 2-5)
5. Remove the cutter unit. (Fig. 2-7)
6. Remove the head bracket. (Fig. 2-13)
7. Remove the platen roller. (Fig. 2-14)
8. Remove screws retaining the paper guide assy. (Fig. 2-16)
9. Slide the paper guide assy to front side and remove it.
10. For re-assembly, reverse the procedure.

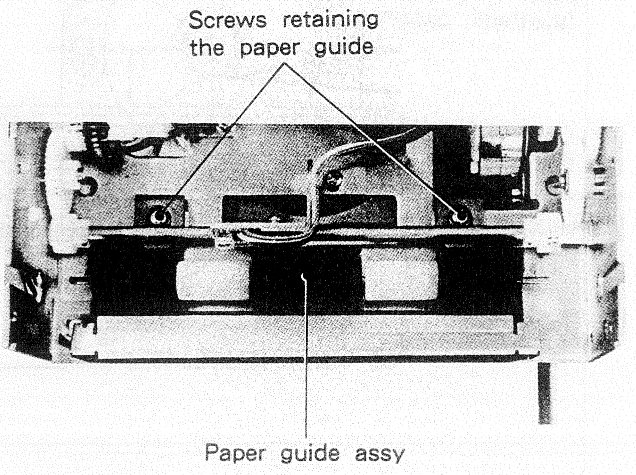

Screws retaining the paper guide
Paper guide assy

Fig. 2-16

Replacement of Step motor

1. Remove the cabinet. (Fig. 2-1)
2. Remove the front unit. (Fig. 2-2)
3. Remove the switch PCB. (Fig. 2-4)
4. Remove the printer unit. (Fig. 2-5)
5. Remove the printer base. (Fig. 2-6)
6. Remove screws retaining the step motor. (Fig. 2-17)

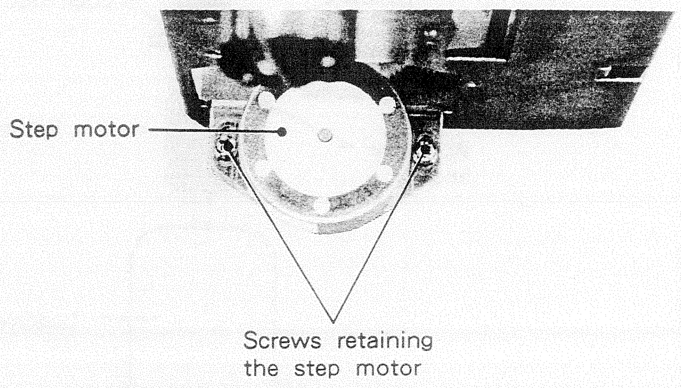

Step motor
Screws retaining the step motor

Fig. 2-17

Replacement of Step motor

7. For re-assembly, reverse the procedure.
   (Note) How to attach the step motor.
   Insert heat-sensitive paper (synthetic paper) folded into two between the pinion gear and the D gear of the step motor and tighten the motor with screws.(Fig. 2-18)
   Remove the heat-sensitive paper (synthetic paper), turn the pinion gear of the step motor manually and confirm that the D gear also turns.

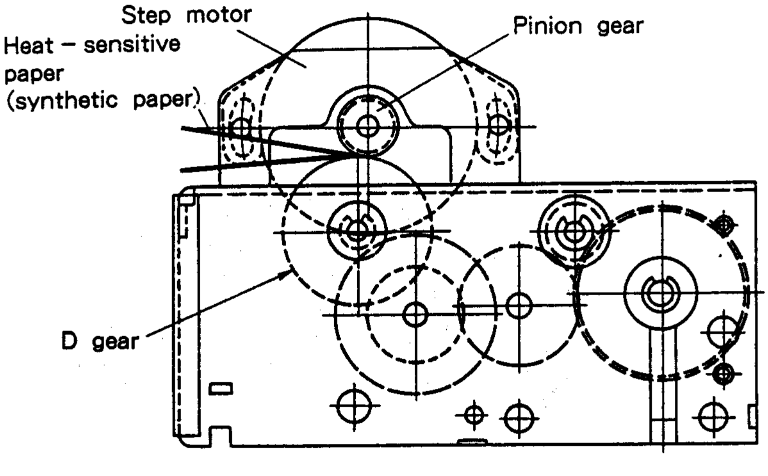

Step motor
Heat – sensitive paper (synthetic paper)
Pinion gear
D gear

Fig. 2 – 18

Replacement of Loading motor

1. Remove the cabinet. (Fig. 2-1)
2. Remove the front unit. (Fig. 2-2)
3. Remove the switch PCB. (Fig. 2-4)
4. Remove the printer unit. (Fig. 2-5)
5. Remove the printer base. (Fig. 2-6)
6. Loosen screws retaining the thrust and separate it from the auxiliary shaft. (Fig.2-19)

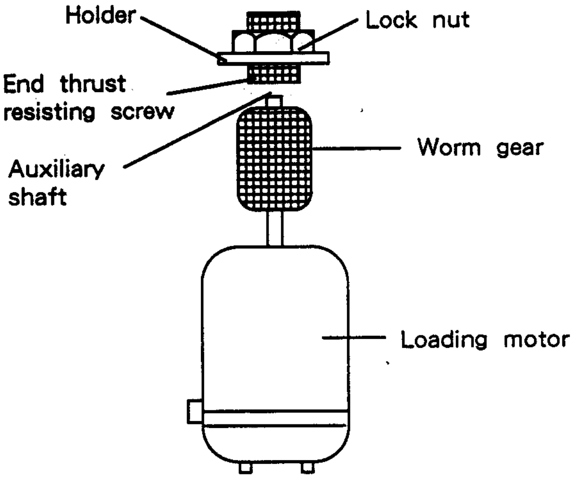

Holder
Lock nut
End thrust resisting screw
Worm gear
Auxiliary shaft
Loading motor

Fig. 2 – 19

Replacement of Loading motor

7. Remove screws retaining the loading motor.
8. For re-assembly, reverse the procedure.
   (Note)
   How to retain the loading motor.
   a. A hach the end thrust resisting screw, and then fit the loading motor so that the end of its shaft touches the thrust resisting screw.
   b. Turn the thrust resisting screw until the screw softly contacts the auxiliary shaft and turn it in the opposite direction from that point by 90° .
   c. Tighten the nut with the dented part placed down so that the thrust resisting screw does not move.
   d. Apply screw lock compound as shown in Fig. 2 – 20 to the holder and both screw threads.
   ※Use of the SCREW LOCK (1401B) for VCR.
   e. Use the platen, sensor positioning jig and check if the position of the platen sensor is correct. (Refer to the positioning of platen and sensor.)

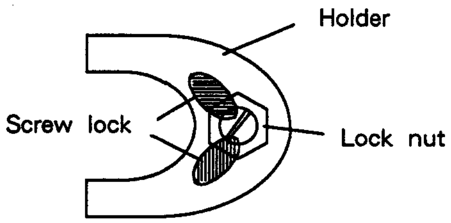


Fig. 2-20

Positioning of Platen sensor

When platen roller, cam (L, R) etc. are replaced or printer mechanism is disassembled for servicing, re-assemble correctly using "platen-sensor positioning jig" (Parts No. : 859C425090).

1. Insert the platen roller, cam (L) and cam (R) in the frame of the printer mechanism.
   (Note) Comfirm that the position of the cam (L) and cam (R) is the head-up position (⊸).(Fig. 2-21)

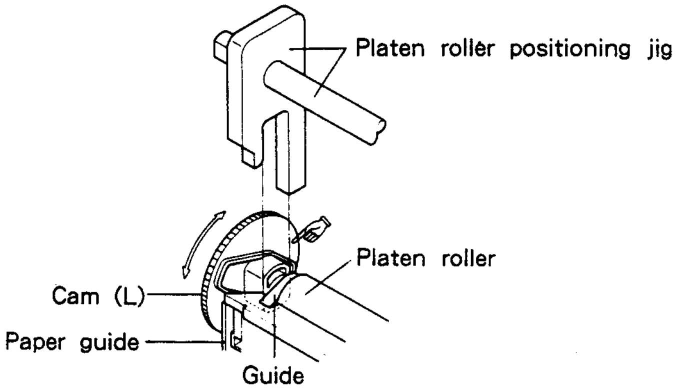


Fig. 2 – 21

Positioning of Platen sensor

2. As shown in Fig. 2-22, insert "platen roller positioning jig" in the cam (L) and cam (R) and fix them.
3. As shown in Fig. 2-22, fix the position of the cover plate with "the sensor positioning jig".

● Confirm that A-part contacts with the cover plate with no clearance, B-part is inserted in the flute of the sensor and C-part is inserted in the sensor board.

In case re-adjustment is required, loosen 2 screws retaining the fixing table assy as shown in Fig. 2-22 and adjust so that the positions of the cams (L, R) and the cover plate are correct.

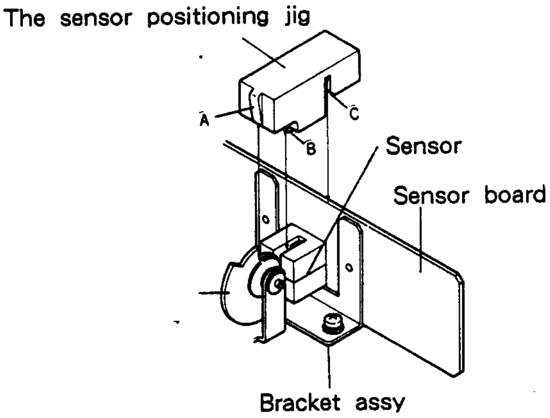

The sensor positioning jig
A
B
C
Sensor
Sensor board
Bracket assy

Fig. 2-22

Cleaning of Thermal head

When the thermal head is dirty, rain-drop pattern or white vertical lines may appear on the printed picture.
In this case, use the attached cleaning sheet or the thermal head cleaner pen TH-2000 (859C425050) (Separate purchase) in the following procedure.

● In case of cleaning sheet
1. Turn off power switch.
2. Remove heat-sensitive paper.
3. Turn on power switch.
4. Confirm that AUTO cutter switch is turned off.
   (Note) When the CTU button indicator is turned on, turn off AUTO CUT switch of MODE selector.

5. Insert the tip of the cleaning sheet in the paper supply port.
   (Note) Insert the cleaning sheet with the carbon face (black colored) placed upward.
6. Press FEED button and feed until the cleaning sheet comes out.
   (Note) In case feeding is not performed although FEED button is pressed, take out the cleaning sheet and insert it into the depth as much as possible. When the cleaning sheet is inserted slantedly and fed, the sheet will be wrinkled and the later use may be disabled. Be sure to insert the sheet in the right angle to the supply part.

7. After letting the cleaning sheet through several times,set heat-sensitive paper and print 2-3 sheets to check the effect of the cleaning.
   (Note)
   - Store the cleaning sheet in a cool and dark place away from direct sun light.

   - This cleaning sheet is exclusively for cleaning the thermal head. Never use it for other purposes.

   - When the cleaning sheet is used too often the thermal head performance may deteriorate. As for the cleaning standard, use the cleaning sheet once for every 10 rolls of heat sensitive paper.

   - The cleaning sheet may dissolve, or otherwsie fall apart, when it is exposed to organic solvent (thinner, alcohol) acid or alkali. Be careful.

Cleaning of Thermal head

- How to use the cleaner pen.

1. Take the procedure for replacing the thermal head. (Page 19, 20, 21)
2. Turn over the thermal head and clean the heating element (brown part) with the cleaner pen (859C425050) (Separately purchased).
   (Note) Move the cleaner pen in parallel to the heating element (brown part). (Fig. 2-23)

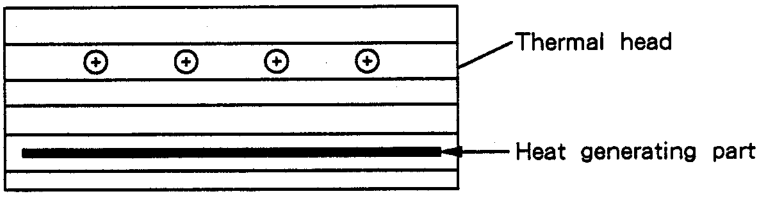


Fig. 2-23

How to use Cleaner pen

1. Draw out the pen from the body and apply adequate amount of cleaning solvent to the body.
   - When the pen core is dirty, replace it with the spare pen. (Fig. 2-24)

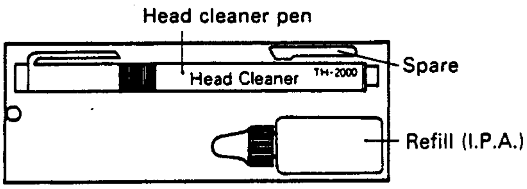


Fig. 2-24

Head cleaner pen
(Parts No. 859C425050 SERVICING JIG)

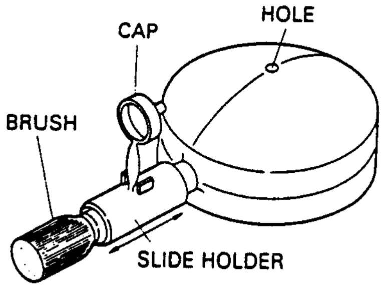
(Note)

- Since the cleaning solvent is inflammable, close the cap after the use and be particularly careful against fire.
- Store it in a cool and dark place away from direct sun beams.

Cleaning of Platen roller

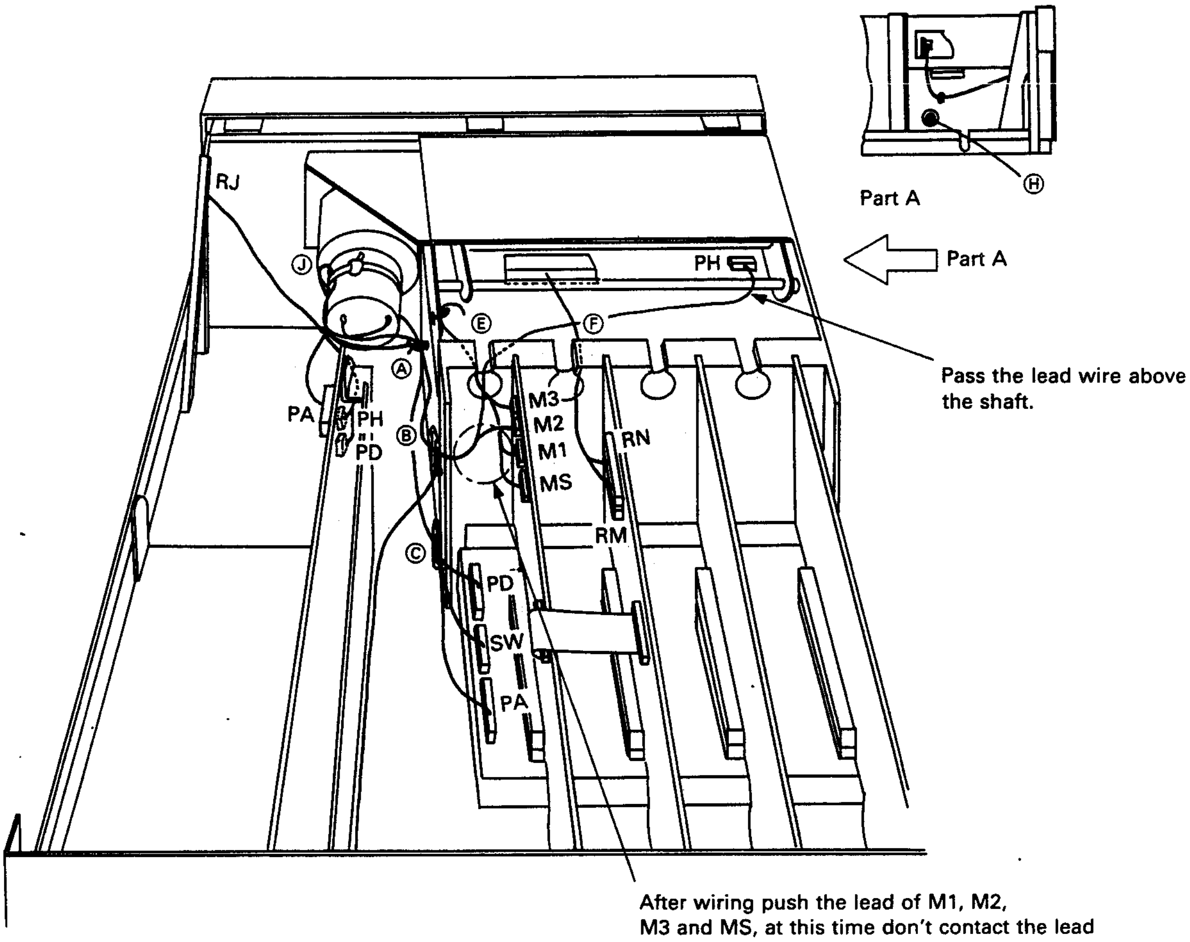
A dirty platen roller may give very poor print quality.
To avoid such a case, clean the roller in the following procedure.

1. Take the procedure for replacing the platen roller. (Page 21, 22)
2. Check the platen roller and in case dirt or dust is adhered, use the blower brush shown in Fig. 2-25 to clean it.
3. If the stains are heavy, use a tooth brush and alcohol to clean it. In this case, be careful not to damage or scratch the roller.
4. After cleaning the platen roller, check for normal printing.



BLOWER BRUSH
PARTS No. 859D048010

Fig. 2-25


Part A
Ⓗ
Part A
RJ
Ⓙ
PH
Ⓔ
Ⓕ
Ⓐ
PA
PH
PD
Ⓑ
M3
M2
M1
MS
RN
RM
Ⓒ
PD
SW
PA

Pass the lead wire above the shaft.

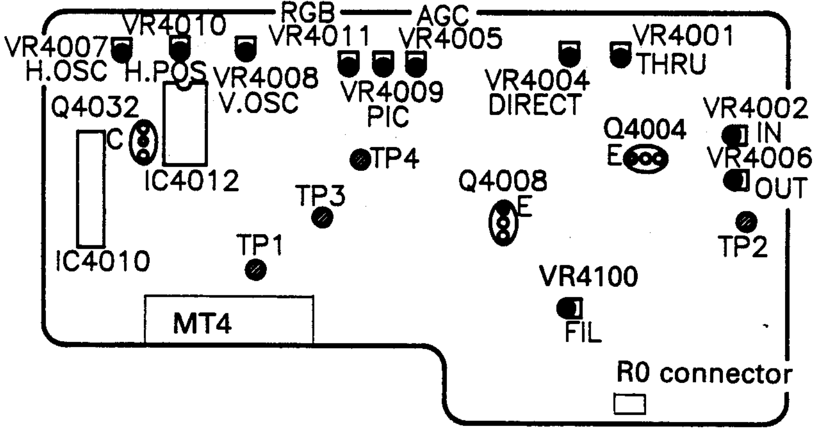
After wiring push the lead of M1, M2, M3 and MS, at this time don't contact the lead to POWER UNIT and edge of sheet metal.

	LEAD TO BE CLAMPED	REMARK
A	PA, PD, PH, SW, RJ, M2, FM	
B	PH, RJ, M2	
C	PA, PD, SW	
D		
E	PH, MS, M1, M3	
F	RM, RN·	
G		
H	CS	
J	PA, PD, PH, M2	Clamp at the body of motor.

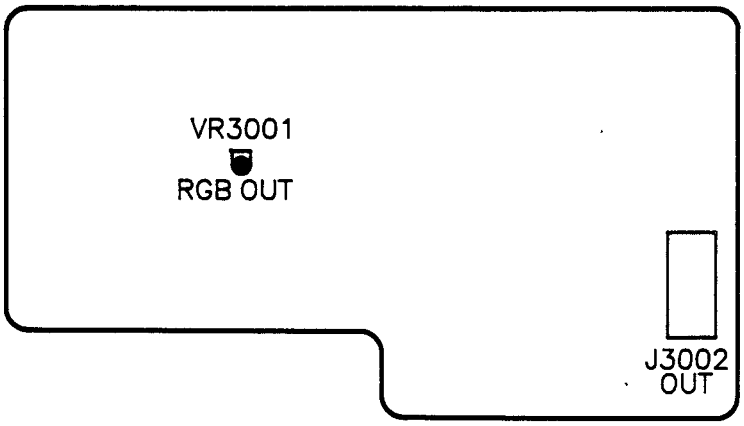
LEAD DRESS

LOCATION ON CONTROL PCB

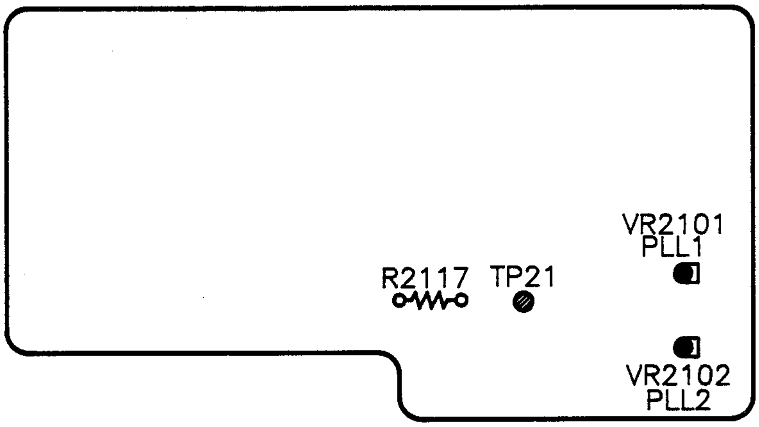
PCB–VIDEO (COMPONENT SIDE)


RGB
AGC
VR4007
H.OSC
VR4010
H.POS
VR4008
V.OSC
VR4011
VR4005
VR4009
PIC
VR4004
DIRECT
VR4001
THRU
Q4032
C
IC4012
IC4010
TP4
TP3
TP1
Q4004
E
Q4008
E
VR4002
IN
VR4006
OUT
TP2
VR4100
FIL
MT4
R0 connector

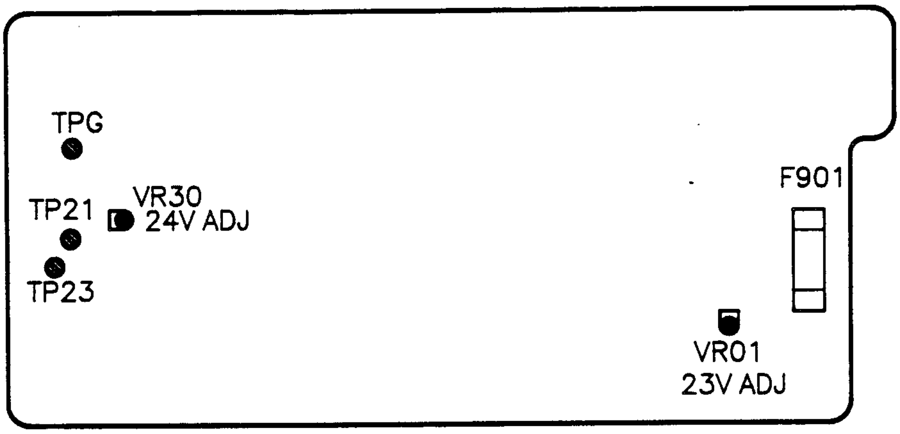
PCB–RGB (COMPONENT SIDE)


VR3001
RGB OUT
J3002
OUT

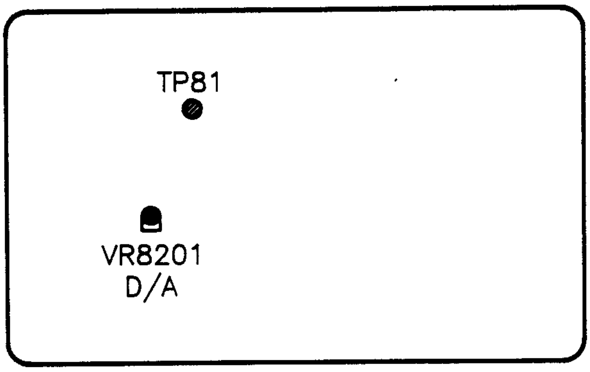
PCB–RAM (COMPONENT SIDE)


VR2101
PLL1
R2117
TP21
VR2102
PLL2

PCB–POWER (COMPONENT SIDE)


TPG
TP21
VR30
24V ADJ
TP23
F901
VR01
23V ADJ

PCB–MOTHER (COMPONET SIDE)

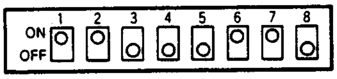

TP81
VR8201
D/A

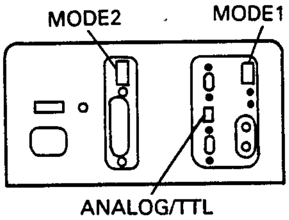
ALIGNMENT PROCEDURE

Set the switches at the front panel and the rear panel to the following positions prior to electrical adjustment.

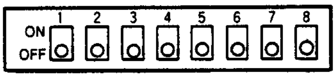
Front panel controls
- POWER ....ON
- SIDE/NORM ....NORM
- FIELD/FRAME ....FRAME
- LIGHT/NORM/DARK...............NORM
- FUNCTION-1 ....USER
- FUNCTION-2 ....STD
- COMMENT ....INITIATORY

Rear panel controls
- ANALOG/TTL ....ANALOG
- MODE 1 SELECT DIP SW

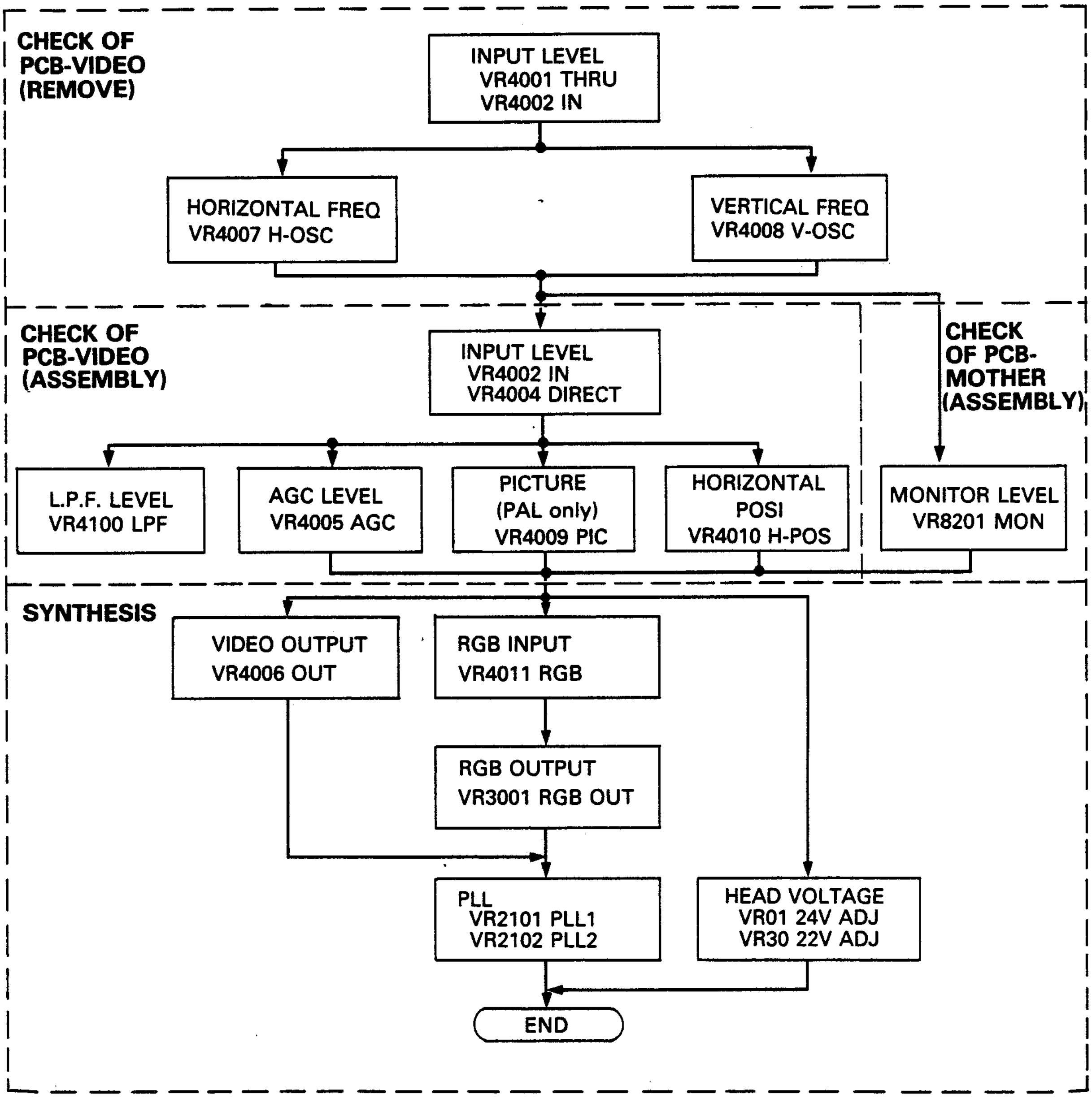

ON
OFF
1
2
3
4
5
6
7
8


MODE2
MODE1
ANALOG/TTL

- MODE 2 SELECT DIP SW


ON
OFF
1
2
3
4
5
6
7
8

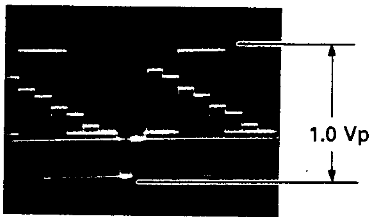
- VIDEO IN .....Standard gray signal 1Vp-p
  Standard colour bar signal 1Vp-p
- RGB IN .... Grey scale (8-steps tone) 0.7Vp-p
  <PGA>


CHECK OF PCB-VIDEO (REMOVE)
INPUT LEVEL
VR4001 THRU
VR4002 IN
HORIZONTAL FREQ
VR4007 H-OSC
VERTICAL FREQ
VR4008 V-OSC
CHECK OF PCB-VIDEO (ASSEMBLY)
INPUT LEVEL
VR4002 IN
VR4004 DIRECT
CHECK OF PCB-MOTHER (ASSEMBLY)
L.P.F. LEVEL
VR4100 LPF
AGC LEVEL
VR4005 AGC
PICTURE
(PAL only)
VR4009 PIC
HORIZONTAL POSI
VR4010 H-POS
MONITOR LEVEL
VR8201 MON
SYNTHESIS
VIDEO OUTPUT
VR4006 OUT
RGB INPUT
VR4011 RGB
RGB OUTPUT
VR3001 RGB OUT
PLL
VR2101 PLL1
VR2102 PLL2
HEAD VOLTAGE
VR01 24V ADJ
VR30 22V ADJ
END

EAROM initial writing
When exchange EAROM (IC1007) or programme ROM (IC1004), do the EAROM initial writing according to the following procedures.

(1) Turn off the POWER switch.
(2) Set the MODE2 DIP-SW-② (PARALLEL) to "ON" position.
(3) Turn on the POWER switch.
(4) Press the COPY button. Confirm that the PARALLEL indicator lamps goes out then lights again after one or two seconds.
(5) Reset the MODE2 DIP-SW-② to "OFF" position.

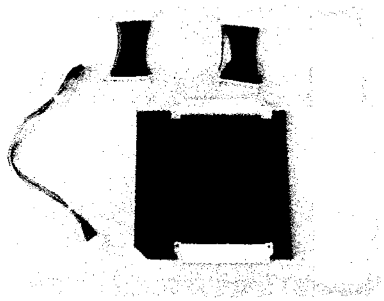
ALIGNMENT PROCEDURE

ADJUSTING ITEM	ADJUSTING POINT	ADJUSTING METHOD
INPUT LEVEL	**VR4001 (PCB-VIDEO)**	1. Feed a PAL standard grey signal to VIDEO IN connector. 2. Connect an oscilloscope to R0 connector (75Ω terminated). 3. Re-adjust VR4001 for $1.0V_{p-p} \pm 0.05V$. 4. Connect an oscilloscope to emitter of Q4004. 5. Re-adjust VR4002 for $1.0V_{p-p} \pm 0.1V$  Setting of the oscilloscope; Vertical range: 20[mV/DIV] Horizontal range: 10[μsec/DIV] Probe 10:1
HORIZONTAL FREQUENCY	**VR4007 (PCB-VIDEO)**	1. Set to the no signal condition. 2. Connect a frequency counter to collector of Q4032 or pin ③ of IC4010. 3. Re-adjust VR4007 for 15.65 kHz ±0.02 kHz reading on the counter.
VERTICAL FREQUENCY	**VR4008 (PCB-VIDEO)**	1. Set to the no signal condition. 2. Connect a frequency counter to pin ⑮ of IC4012 or pin ④ of IC4010. 3. Re-adjust VR4008 for 45 Hz ± 1 Hz reading on the counter.

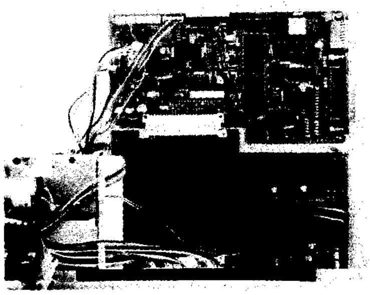
ALIGNMENT PROCEDURE

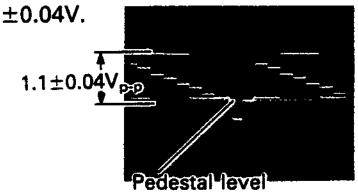
CHECK OF THE PCB-VIDEO (ASSEMBLY)

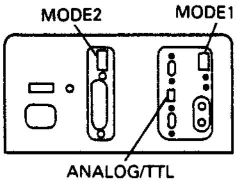
EXTENSION CABLES

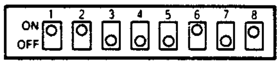


ASSEMBLED VIEW



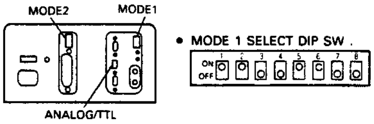
<table>
<tr><th>ADJUSTING ITEM</th><th>ADJUSTING POINT</th><th>ADJUSTING METHOD</th></tr>
<tr><td>INPUT LEVEL</td><td>VR4002
VR4004
(PCB-VIDEO)</td><td>
1. Feed a PAL standard grey signal to VIDEO input terminal.
2. Connect an oscilloscope to TP3.
V scale; 0.2V/DIV.
3. Set the function switch for "FUNCTION (1)" and select "USER" as follows.
<table>
<tr><td>B-LEV</td><td>W-LEV</td><td>SHARP</td><td>AGC</td><td>DIRECT</td><td>DITHER</td></tr>
<tr><td>0</td><td>0</td><td>0</td><td>OFF</td><td>OFF</td><td>OFF</td></tr>
</table>
4. Re-adjust VR4002 for 1.1 V_{p-p} ±0.04V.
5. Select "DIRECT ON".
6. Re-adjust VR4004 for 1.1 V_{p-p} ±0.04V.
7. Select "DIRECT OFF".


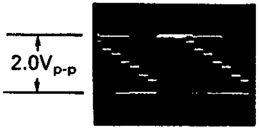
</td></tr>
<tr><td>L.P.F. LEVEL</td><td>VR4100
(PCB-VIDEO)</td><td>
1. Feed a PAL standard grey signal to VIDEO input terminal.
2. Connect an oscilloscope to TP3.
V scale; 0.2V/DIV.
3. Set the function switch for "FUNCTION (1)" and select "USER" as follows.
<table>
<tr><td>B-LEV</td><td>W-LEV</td><td>SHARP</td><td>AGC</td><td>DIRECT</td><td>DITHER</td></tr>
<tr><td>0</td><td>0</td><td>0</td><td>OFF</td><td>OFF</td><td>OFF</td></tr>
</table>
4. Turn ON the DIP switch MODE1 no. 8 (FIL/THRU).


• MODE 1 SELECT DIP SW


5. Adjust VR4100 so that both amplitudes of VIDEO signal are equal when the DIP-switch MODE1 no. 8 (FIL/THRU) position is "ON" and "OFF".
6. Select "OFF" switch DIP switch MODE1 no.8.
</td></tr>
</table>

ALIGNMENT PROCEDURE

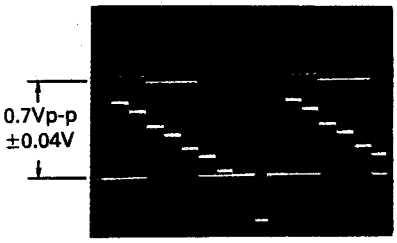
<table>
<tr><th>ADJUSTING ITEM</th><th>ADJUSTING POINT</th><th>ADJUSTING METHOD</th></tr>
<tr><td>AGC LEVEL</td><td>VR4005 (PCB-VIDEO)</td><td>
1. Feed a PAL standard grey signal to VIDEO input terminal.
2. Connect an oscilloscope to testpoint TP3.
3. Set the function switch for "FUNCTION (1)" and select "AGC ON".
<table>
<tr><th>B-LEV</th><th>W-LEV</th><th>SHARP</th><th>AGC</th><th>DIRECT</th><th>DITHER</th></tr>
<tr><td>0</td><td>0</td><td>0</td><td>ON</td><td>OFF</td><td>OFF</td></tr>
</table>
4. Adjust the amplitude of VIDEO signal by turning VR4005 so that both voltages are equal when the AGC is ON and OFF.
5. Select AGC "OFF".
</td></tr>
<tr><td>PICTURE</td><td>VR4009 (PCB-VIDEO)</td><td>
1. Feed a PAL standard colour bar signal to VIDEO input terminal.
($1.0V_{p-p}$ (75Ω), Burst level 350mV ±150mV)
2. Turn OFF the DIP switch MODE1 no.8 (FIL/THRU).
3. Set the function switch for "FUNCTION (1)" and select "DIRECT ON".
<table>
<tr><th>B-LEV</th><th>W-LEV</th><th>SHARP</th><th>AGC</th><th>DIRECT</th><th>DITHER</th></tr>
<tr><td>0</td><td>0</td><td>0</td><td>OFF</td><td>ON</td><td>OFF</td></tr>
</table>
4. Connect an oscilloscope to test point TP4.
V. scale; 10mV/DIV
Probe 10 : 1
5. Confirm and record of burst level.
6. Re-adjust VR4009 so that burst level is equal to the "DIRECT ON" level ±20mV.
7. Select DIRECT "OFF".
</td></tr>
<tr><td>HORIZONTAL</td><td>VR4010 (PCB-VIDEO)</td><td>
1. Feed a PAL standard grey signal to VIDEO input terminal.
2. Set the function switch to provide a menu screen.
3. Turn ON the DIP switch MODE 1 no.5. (TV/NORM).


4. Adjust VR4010 to stabilize the menu on the screen horizontally in spite of TV/NORM switch ON/OFF.
Note: The position TV/NORM switch OFF is a standard. Adjust the menu TV/NORM switch ON to the standard position.
5. Turn OFF (NORM) the DIP switch no.5.
</td></tr>
<tr><td colspan="3">CHECK OF THE PCB-MOTHER (ASSEMBLY)</td></tr>
<tr><td>MONITOR LEVEL</td><td>VR8201 (PCB-MOTHER)</td><td>
1. Feed a PAL standard grey signal to VIDEO input terminal.
2. Connect an oscilloscope to test point TP81 or TP1 (PCB-VIDEO).
3. Set the function switch to provide a menu screen.
4. Re-adjust VR8201 so that words portion is 2.0 V_{p-p}.


Setting of the oscilloscope;
Vertical range: 50[mV/DIV]
Horizontal range; 10[μsec/DIV]
Probe 10:1
</td></tr>
</table>

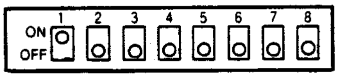
ALIGNMENT PROCEDURE (SYNTHESIS)

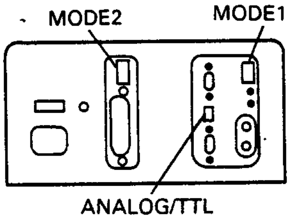
<table>
<tr><th>ADJUSTING ITEM</th><th>ADJUSTING POINT</th><th>ADJUSTING METHOD</th></tr>
<tr><td>VIDEO OUTPUT</td><td>VR4006 (PCB-VIDEO)</td><td>
1. Feed a PAL standard grey signal to VIDEO input terminal
2. Connect an oscilloscope to pin ② of [R0] connector. (75Ω terminated).
3. Set the function switch for "FUNCTION (1)" and select "STD".
4. Re-adjust VR4006 so that picture portion is 0.70 V_{p-p} ±0.04V.



Setting of the oscilloscope;
Vertical range : 20[mV/DIV]
Horizontal range: 10[μsec/DIV]
Probe 10:1
</td></tr>
<tr><td>RGB INPUT</td><td>VR4011 (PCB-VIDEO)</td><td>
1. Feed a RGB ANALOG PGA grey scale (8-steps tone) signal to RGB input terminal.
2. Turn ON the DIP switch [MODE 2] no.1 (RGB/VIDEO).

- MODE 2 SELECT DIP SW

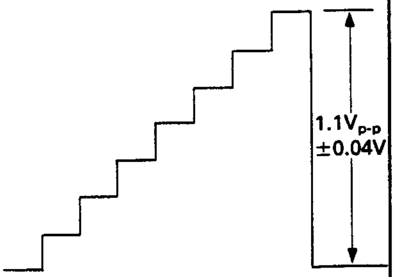




3. Connect an oscilloscope to testpoint [TP3].
4. Set the function switch as follow.

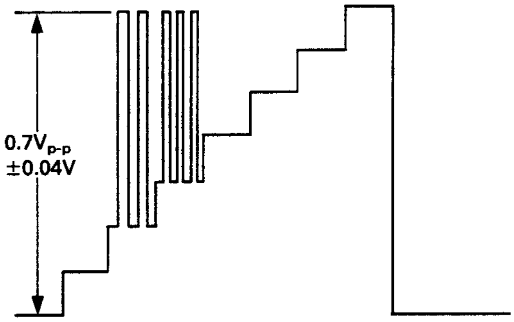
<table>
<tr><th>B-LEV</th><th>W-LEV</th><th>SHARP</th><th>DIRECT</th><th>AGC</th></tr>
<tr><td>0</td><td>0</td><td>0</td><td>OFF</td><td>OFF</td></tr>
</table>

5. Re-adjust VR4011 for $1.1V_{p-p}$ ±0.04V.

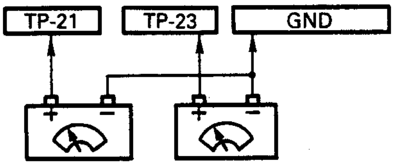
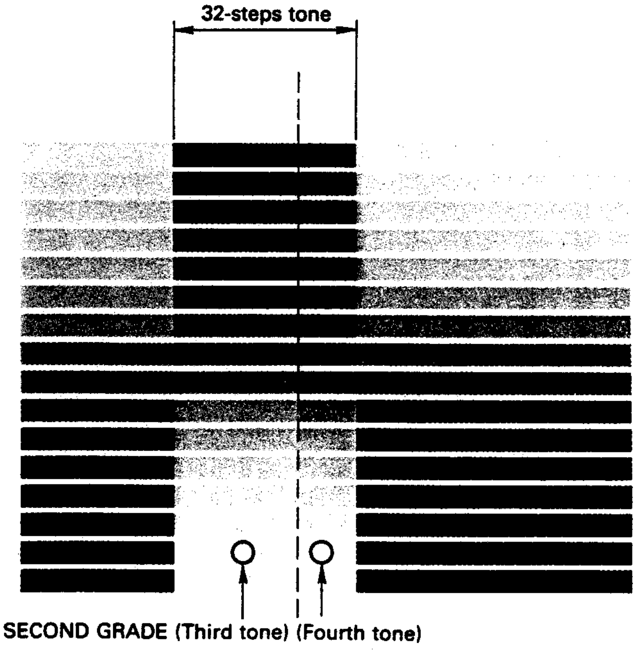


</td></tr>
</table>

ALIGNMENT PROCEDURE

ADJUSTING ITEM	ADJUSTING POINT	ADJUSTING METHOD
RGB OUTPUT	VR3001 (PCB-RGB)	1. Feed a RGB ANALOG PGA grey scale (8-steps tone) signal to RGB input terminal. 2. Turn ON the DIP switch MODE 2 no.1. 3. Connect an oscilloscope to pin 1 of RGB output terminal. (75Ω terminated) 4. Push the function switch to provide a menu screen. 5. Re-adjust VR3001 so that words portion is $0.70V_{p-p}\pm0.04V$. 
PLL	VR2101 VR2102 (PCB-RAM)	1. Turn OFF the DIP switch MODE 2 no. ① (RGB/VIDEO). Turn OFF the DIP switch MODE 1 no. ⑤ (TV/NOR). 2. Set the function swich for "FUNCTION (2)" and select "STD". 3. Connect a frequency counter to test point TP21. 4. Set to the no signal. 5. Re-adjust VR2102 for 14.0 MHz ±0.2 MHz reading on the counter. Turn VR2101 to the mechanical centre position.

ALIGNMENT PROCEDURE

ADJUSTING ITEM	ADJUSTING POINT	ADJUSTING METHOD
HEAD VOLTAGE	**VR01** **VR30** **(PCB-POWER)**	1. Feed a PAL standard colour bar signal to the VIDEO IN terminal. 2. Set Power switch OFF. 3. Connect two DC voltmeters as shown in following figure.  DC voltmeter 4. Set Power switch ON. And put COPY switch to print a test pattern. Note: The following items 6-7 should be done for printing the test pattern. 5. Adjust VR01 for the reading of the voltage 27 V at TP-23. 6. According to a resistance described in the back of head. Set a converted voltage through the head voltage table in next page. Adjust VR30 for the reading of the voltage $^{+0.1}_{-0}$V at TP-21. 7. Observing a second grade of test pattern maked in Fig. 3-2, ajust VR30 for the position that a gray scale began to appear. 8. Set to the no signal condition. 9. Turn on the DIP switch $\boxed{\text{MODE 2}}$ no. 3. 10. Adjust VR01 so that the voltage at TP-23 is the same as the voltage at TP-21. TP23 voltage = TP21 voltage + (2.5±0.1V) **TEST PATTERN** 

HEAD VOLTAGE TABLE

HEAD MARKING "D"		HEAD MARKING "C"	
RESISTANCE (Ω)	VOLTAGE $^{+0.1V}_{-\ 0V}$	RESISTANCE (Ω)	VOLTAGE $^{+0.1V}_{-\ 0V}$
R=679-685	V=19.6	R=684-690	V=19.5
R=686-693	V=19.7	R=691-697	V=19.6
R=694-700	V=19.8	R=698-704	V=19.7
R=701-707	V=19.9	R=705-712	V=19.8
R=708-714	V=20.0	R=713-719	V=19.9
R=715-722	V=20.1	R=720-276	V=20.0
R=723-729	V=20.2	R=727-734	V=20.1
R=730-737	V=20.3	R=735-741	V=20.2
R=738-744	V=20.4	R=742-748	V=20.3
R=745-751	V=20.5	R=749-756	V=20.4
R=752-759	V=20.6	R=757-764	V=20.5
R=760-767	V=20.7	R=765-771	V=20.6
R=768-774	V=20.8	R=772-779	V=20.7
R=775-782	V=20.9	R=780-786	V=20.8
R=783-789	V=21.0	R=787-794	V=20.9
R=790-797	V=21.1	R=795-802	V=21.0
R=798-805	V=21.2	R=803-810	V=21.1
R=806-813	V=21.3	R=811-817	V=21.2
R=814-820	V=21.4	R=818-825	V=21.3
R=821-828	V=21.5	R=826-833	V=21.4
R=829-836	V=21.6	R=834-841	V=21.5
R=837-844	V=21.7	R=842-849	V=21.6
R=845-852	V=21.8	R=850-857	V=21.7
R=853-860	V=21.9	R=858-865	V=21.8
R=861-868	V=22.0	R=866-873	V=21.9
R=869-876	V=22.1	R=866-873	V=22.0
R=877-884	V=22.2	R=882-889	V=22.1
R=885-893	V=22.3	R=890-897	V=22.2
R=894-901	V=22.4	R=898-906	V=22.3
R=902-909	V=22.5	R=907-914	V=22.4
R=910-917	V=22.6	R=915-922	V=22.5
R=918-926	V=22.7	R=923-931	V=22.6

PARTS LIST

MODEL : P68E

In order to expedite delivery of replacement part orders.

Specify : 1. Model number/Serial number
2. Part number and Description
3. Quantity

Unless full information is supplied, delay in execution of orders will result.

⚠ : Critical components ○ : New Parts

MARK	B	C	D	F	G	J	K
TOLERANCE (%)	± 0.1	± 0.25	± 0.5	± 1	± 2	± 5	± 10

MARK	M	N	V	X	Z	P	Q
TOLERANCE (%)	± 20	± 30	+ 10 − 10	+ 40 − 20	+ 80 − 20	+ 100 − 0	+ 30 − 10

MARK	B	C	D	F	G
TOLERANCE (pF)	± 0.1	± 0.25	± 0.5	± 1	± 2

SYMBOL NO.	PARTS NO.	PARTS NAME	DESCRIPTION
		INTEGRATED CIRCUITS	
IC 301	266P849010	IC (TTL)	SN74LS74AN
IC 302	266P478010	IC	SN74LS86N
IC1001	263P748010	IC	M50734SP
IC1002	266P882010	IC (TTL)	SN74LS373N
IC1003	263P751010	IC	μPD446C-2
IC1004	263P108070	IC	UPD27C256AD20
IC1005	272P178010	IC	SN74ALS245N
IC1006	272P178010	IC	SN74ALS245N
IC1007	272P064010	IC	M58630P
IC1009	266P998010	IC	M54543L
IC1010	263P046010	IC	TA8050P
IC1011	272P175010	IC	M54567P
IC1012	263P616010	IC	TC74HC240P
IC1013	266P487010	IC	SN74LS165AN
IC1014	266P727010	IC	μPC339C/MC3302P
IC1015	266P154010	IC	μPC393C
IC1016	266P130020	IC	PST520C
IC1017	266P130040	IC	PST520H
IC2001	263P754040	IC	UPD65024GF-201-3BA
IC2002	263P754030	IC	μPD65013GF313
IC2003	263P754020	IC	μPD65013GF305
IC2004	263P753010	IC	μPD65042GF188
IC2005	263P746010	IC	HD63484P8
IC2006	266P844010	IC	SN74LS123N
IC2007	263P770010	IC	HD74HC244P
IC2008	263P770010	IC	HD74HC244P
IC2009	263P790050	IC	UPD27C256AD15
IC2010	263P747010	IC	M5M5165P-10
IC2011	263P757010	IC	M5M4C264L-12
IC2012	263P757010	IC	M5M4C264L-12
IC2013	263P757010	IC	M5M4C264L-12
IC2014	263P757010	IC	M5M4C264L-12
IC2015	263P757010	IC	M5M4C264L-12
IC2016	263P757010	IC	M5M4C264L-12
IC2017	263P757010	IC	M5M4C264L-12
IC2018	263P757010	IC	M5M4C264L-12
IC2019	263P757010	IC	M5M4C264L-12
IC2020	263P757010	IC	M5M4C264L-12
IC2021	263P757010	IC	M5M4C264L-12
IC2022	263P757010	IC	M5M4C264L-12
IC2023	266P407020	IC	μPD41464C-10/MB81464
IC2024	272P178010	IC	SN74ALS245N
IC2025	272P178010	IC	SN74ALS245N
IC2101	272P071010	IC	BA7041
IC2102	263P894010	IC	TC5081AP
IC2103	266P520010	IC	M5236L
IC2104	263P302050	IC	HD74HC02P
IC3001	266P490010	IC	SN74LS245N
IC3002	266P490010	IC	SN74LS245N
IC3003	263P053020	IC	TC4053BP
IC3005	266P490010	IC	SN74LS245N
IC3006	266P241010	IC	SN74LS257AN
IC3007	266P241010	IC	SN74LS257AN
IC3008	266P241010	IC	SN74LS257AN
IC3011	266P840020	IC	SN74LS00N
IC3012	266P853020	IC	SN74LS08N
IC3013	266P878010	IC	SN74LS32N
IC3015	266P478010	IC	SN74LS86N
IC3018	266P853020	IC	SN74LS08N
IC3019	266P452020	IC	SN74LS05N
IC3020	266P853020	IC	SN74LS08N
IC3021	266P844010	IC	SN74LS123N
IC4001	263P053020	IC	TC4053BP
IC4002	263P053020	IC	TC4053BP
IC4003	263P053020	IC	TC4053BP
IC4010	267P026020	IC	B073-2
IC4012	266P507020	IC	LA7824
IC4013	266P419010	IC	M5223P
IC4014	266P645010	IC	M51392P
IC4015	263P869010	IC	μPD6326C
IC4016	263P607010	IC	TC74HC4050P
IC4017	266P806020	IC	SN7406N
IC4018	266P154010	IC	μPC393C
IC8001	272P177010	IC	M54977P
IC8002	266P171010	IC	M50125P
IC8201	266P241010	IC	SN74LS257AN
IC8202	266P241010	IC	SN74LS257AN
IC8203	272P086010	IC	MB40576
IC8204	272P087010	IC	MB40776
IC8205	272P229010	IC	μPC812C
IC8206	266P848010	IC	SN74LS02N
		TRANSISTORS	
Q 1001	260P632010	TRANSISTOR	DTC124ES
Q 1002	260P632010	TRANSISTOR	DTC124ES
Q 1003	260P632010	TRANSISTOR	DTC124ES
Q 1004	260P632010	TRANSISTOR	DTC124ES
Q 2101	260P254010	TRANSISTOR	2SA1175-E
Q 3001	260P477010	TRANSISTOR	2SC2026-K, L
Q 3002	260P477010	TRANSISTOR	2SC2026-K, L
Q 3003	260P338030	TRANSISTOR	2SC2603-F
Q 3004	260P477010	TRANSISTOR	2SC2026-K, L
Q 3005	260P477010	TRANSISTOR	2SC2026-K, L
Q 3006	260P338030	TRANSISTOR	2SC2603-F
Q 3007	260P477010	TRANSISTOR	2SC2026-K, L
Q 3008	260P477010	TRANSISTOR	2SC2026-K, L
Q 3009	260P338030	TRANSISTOR	2SC2603-F
Q 3010	260P416030	TRANSISTOR	2SC2274-F
Q 3011	260P416030	TRANSISTOR	2SC2274-F
Q 3012	260P416030	TRANSISTOR	2SC2274-F
Q 3013	260P338030	TRANSISTOR	2SC2603-F
Q 3015	260P338030	TRANSISTOR	2SC2603-F
Q 3016	260P338030	TRANSISTOR	2SC2603-F
Q 3017	260P338030	TRANSISTOR	2SC2603-F
Q 3019	260P632010	TRANSISTOR	DTC124ES
Q 3021	260P338030	TRANSISTOR	2SC2603-F
Q 3022	260P338030	TRANSISTOR	2SC2603-F
Q 3023	260P338030	TRANSISTOR	2SC2603-F

SYMBOL NO.	PARTS NO.	PARTS NAME	DESCRIPTION
Q 3024	260P338030	TRANSISTOR	2SC2603-F
Q 3027	260P338040	TRANSISTOR	2SC2603-E, F
Q 4001	260P477010	TRANSISTOR	2SC2026-K, L
Q 4002	260P477010	TRANSISTOR	2SC2026-K, L
Q 4003	260P338040	TRANSISTOR	2SC2603-E, F
Q 4004	260P338040	TRANSISTOR	2SC2603-E, F
Q 4005	260P338040	TRANSISTOR	2SC2603-E, F
Q 4006	260P338040	TRANSISTOR	2SC2603-E, F
Q 4007	260P338040	TRANSISTOR	2SC2603-E, F
Q 4008	260P338040	TRANSISTOR	2SC2603-E, F
Q 4009	260P338040	TRANSISTOR	2SC2603-E, F
Q 4011	260P416020	TRANSISTOR	2SC2274-E
Q 4012	260P338040	TRANSISTOR	2SC2603-E, F
Q 4013	260P338040	TRANSISTOR	2SC2603-E, F
Q 4014	260P338040	TRANSISTOR	2SC2603-E, F
Q 4015	260P338040	TRANSISTOR	2SC2603-E, F
Q 4016	260P338040	TRANSISTOR	2SC2603-E, F
Q 4017	260P338040	TRANSISTOR	2SC2603-E, F
Q 4018	260P338040	TRANSISTOR	2SC2603-E, F
Q 4019	260P338040	TRANSISTOR	2SC2603-E, F
Q 4020	260P338040	TRANSISTOR	2SC2603-E, F
Q 4021	260P338040	TRANSISTOR	2SC2603-E, F
Q 4022	260P298010	TRANSISTOR	2SC1583-F
Q 4030	260P632010	TRANSISTOR	DTC124ES
Q 4031	260P632010	TRANSISTOR	DTC124ES
Q 4032	260P582010	TRANSISTOR	2SK656
Q 4033	260P632010	TRANSISTOR	DTC124ES
Q 4034	260P632010	TRANSISTOR	DTC124ES
Q 4035	260P632010	TRANSISTOR	DTC124ES
Q 4036	260P338030	TRANSISTOR	2SC2603-F
Q 4100	260P338040	TRANSISTOR	2SC2603-E, F
Q 4101	260P338040	TRANSISTOR	2SC2603-E, F
Q 4102	260P338040	TRANSISTOR	2SC2603-E, F
Q 4200	260P338030	TRANSISTOR	2SC2603-F
Q 4201	260P338030	TRANSISTOR	2SC2603-F
Q 8001	260P254010	TRANSISTOR	2SA1175-E
Q 8002	260P455010	TRANSISTOR	DTC124EF
Q 8003	260P455010	TRANSISTOR	DTC124EF
Q 8203	260P338030	TRANSISTOR	2SC2603-F
Q 8204	260P338030	TRANSISTOR	2SC2603-F
Q 8205	260P256040	TRANSISTOR	2SA1115-F
Q 8206	260P256040	TRANSISTOR	2SA1115-F
Q 8207	260P582010	TRANSISTOR	2SK656
Q 8208	260P338010	TRANSISTOR	2SC2603-D
Q 8209	260P338030	TRANSISTOR	2SC2603-F
Q 8210	260P338030	TRANSISTOR	2SC2603-F
Q 8211	260P338030	TRANSISTOR	2SC2603-F
Q 8212	260P632010	TRANSISTOR	DTC124ES
Q 8213	260P632010	TRANSISTOR	DTC124ES
		DIODES	
D 1002	264P045040	DIODE	1S2471
D 2101	264P045040	DIODE	1S2471
D 2102	264P045040	DIODE	1S2471
D 2103	264P045040	DIODE	1S2471
D 3022	299D090050	DIODE-BLOCK	264P045-80
D 3023	299D090050	DIODE-BLOCK	264P045-80
D 4001	264P045040	DIODE	1S2471
D 4002	264P464040	DIODE	EQA02-10B/RD10EB3
D 4003	264P483080	DIODE	RD5.1FB2
D 8001	264P525010	LIGHT EMITTING DIODE	SLR-56MG3
D 8002	264P525010	LIGHT EMITTING DIODE	SLR-56MG3
D 8003	264P523020	LIGHT EMITTING DIODE	SLV-31MC3
D 8004	264P523020	LIGHT EMITTING DIODE	SLV-31MC3
D 8005	264P523020	LIGHT EMITTING DIODE	SLV-31MC3
D 8006	264P523020	LIGHT EMITTING DIODE	SLV-31MC3
D 8007	264P523020	LIGHT EMITTING DIODE	SLV-31MC3
D 8008	264P523020	LIGHT EMITTING DIODE	SLV-31MC3
D 8201	264P045040	DIODE	1S2471
		FILTERS	
CF1001	299P110010	CERAMIC RESONATOR	
CF2001	299P119010	CERAMIC RESONATOR	
CF8001	296P044010	CERAMIC FILTER	
L 4100	409P496010	LOW PASS FILTER	
		COILS	
L 1001	325C120070	PEAKING COIL	3.3μH-K
L 1002	325C120070	PEAKING COIL	3.3μH-K
L 1003	325C120070	PEAKING COIL	3.3μH-K
L 1004	325C120070	PEAKING COIL	3.3μH-K
L 1005	325C120070	PEAKING COIL	3.3μH-K
L 1006	325C120070	PEAKING COIL	3.3μH-K
L 1007	325C120070	PEAKING COIL	3.3μH-K
L 1008	325C120070	PEAKING COIL	3.3μH-K
L 1009	325C120070	PEAKING COIL	3.3μH-K
L 1010	325C120070	PEAKING COIL	3.3μH-K
L 1011	325C120070	PEAKING COIL	3.3μH-K
L 1012	325C120070	PEAKING COIL	3.3μH-K
L 1013	325C120070	PEAKING COIL	3.3μH-K
L 1014	325C120070	PEAKING COIL	3.3μH-K
L 1015	325C120070	PEAKING COIL	3.3μH-K
L 1016	411D009020	FERRITE CORE FILTER	
L 1017	411D009020	FERRITE CORE FILTER	
L 1018	411D009020	FERRITE CORE FILTER	
L 1019	411D009020	FERRITE CORE FILTER	
L 1020	411D009020	FERRITE CORE FILTER	
L 1021	411D009020	FERRITE CORE FILTER	
L 1022	411D009020	FERRITE CORE FILTER	
L 1023	411D009020	FERRITE CORE FILTER	
L 1024	411D009020	FERRITE CORE FILTER	
L 1026	411D009020	FERRITE CORE FILTER	
L 1027	411D009020	FERRITE CORE FILTER	
L 1028	411D009020	FERRITE CORE FILTER	
L 1029	411D009020	FERRITE CORE FILTER	
L 2001	411D009020	FERRITE CORE FILTER	
L 2002	411D009020	FERRITE CORE FILTER	
L 2003	325C120090	PEAKING COIL	4.7μH-K
L 2101	325C120050	PEAKING COIL	2.2μH-M
L 3001	411D009020	FERRITE CORE FILTER	
L 3002	411D009020	FERRITE CORE FILTER	

SYMBOL NO.	PARTS NO.	PARTS NAME	DESCRIPTION
L 3003	321C031040	RF COIL	10μH-K
L 3004	321C031040	RF COIL	10μH-K
L 3005	411D009020	FERRITE CORE FILTER	
L 3006	411D009020	FERRITE CORE FILTER	
L 4003	349P064020	TRAP COIL	
L 4004	320P022010	TRAP COIL	
L 4010	321C031040	RF COIL	10μH-K
L 4011	321C031040	RF COIL	10μH-K
L 4013	325C111070	PEAKING COIL	22μH-K
L 4014	325C112000	PEAKING COIL	39μH-K
L 8101	325C120050	PEAKING COIL	2.2μH-M
L 8102	325C120050	PEAKING COIL	2.2μH-M
L 8103	325C120050	PEAKING COIL	2.2μH-M
L 8104	325C120050	PEAKING COIL	2.2μH-M
L 8106	325C120050	PEAKING COIL	2.2μH-M
L 8107	325C120050	PEAKING COIL	2.2μH-M
L 8108	325C120050	PEAKING COIL	2.2μH-M
L 8109	325C120050	PEAKING COIL	2.2μH-M
L 8117	325C120050	PEAKING COIL	2.2μH-M
L 8118	325C120050	PEAKING COIL	2.2μH-M
L 8119	325C120050	PEAKING COIL	2.2μH-M
L 8137	411D009020	FERRITE CORE FILTER	
L 8138	411D009020	FERRITE CORE FILTER	
L 8139	411D009020	FERRITE CORE FILTER	
L 8140	411D009020	FERRITE CORE FILTER	
L 8142	411D009020	FERRITE CORE FILTER	
L 8143	325C120050	PEAKING COIL	2.2μH-M
L 8144	325C120050	PEAKING COIL	2.2μH-M
L 8145	411D009020	FERRITE CORE FILTER	
L 8146	411D009020	FERRITE CORE FILTER	
L 8147	411D009020	FERRITE CORE FILTER	
L 8148	411D009020	FERRITE CORE FILTER	
L 8149	411D009020	FERRITE CORE FILTER	
L 8150	411D009020	FERRITE CORE FILTER	
L 8151	411D009020	FERRITE CORE FILTER	
L 8152	325C120090	PEAKING COIL	4.7μH-K
L 8153	325C120090	PEAKING COIL	4.7μH-K
L 8154	325C120090	PEAKING COIL	4.7μH-K
L 8155	325C120090	PEAKING COIL	4.7μH-K
L 8156	325C120090	PEAKING COIL	4.7μH-K
L 8157	325C120090	PEAKING COIL	4.7μH-K
L 8159	325C121030	PEAKING COIL	10μH-K
L 8160	325C121030	PEAKING COIL	10μH-K
L 8161	325C121030	PEAKING COIL	10μH-K
L 8201	325C120050	PEAKING COIL	2.2μH-M
L 8202	325C120050	PEAKING COIL	2.2μH-M
		VARIABLE RESISTORS	
VR2101	127C180090	VR-SEMIFIXED	1/5W B20KΩ-M
VR2102	127C180080	VR-SEMIFIXED	1/10W B10KΩ-M
VR3001	127C180020	VR-SEMIFIXED	1/5W B300-M
VR4001	127C180040	VR-SEMIFIXED	1/5W B1KΩ-M
VR4002	127C180040	VR-SEMIFIXED	1/5W B1KΩ-M
VR4004	127C180010	VR-SEMIFIXED	1/10W B200KΩ-M
VR4005	127C180080	VR-SEMIFIXED	1/10W B10KΩ-M
VR4006	127C180050	VR-SEMIFIXED	1/5W B2KΩ-M
VR4007	127C180080	VR-SEMIFIXED	1/10W B10KΩ-M
VR4008	127C181030	VR-SEMIFIXED	1/5W B200KΩ-M
VR4009	127C180090	VR-SEMIFIXED	1/5W B20KΩ-M
VR4010	127C180090	VR-SEMIFIXED	1/5W B20KΩ-M
VR4011	127C180040	VR-SEMIFIXED	1/5W B1KΩ-M
VR4100	127C080040	VR-SEMIFIXED	1/5W B1KΩ-M
VR8201	127C080040	VR-SEMIFIXED	1/5W B1KΩ-M
		RESISTORS	
R 1018	103P594010	NETWORK	1/8W 22KΩ-JX9
R 1033	103P554010	NETWORK	1/8W 22KΩ-JX4
R 1039	103P564010	NETWORK	1/8W 22KΩ-JX6
R 1040	103P584010	NETWORK	1/8W 22KΩ-JX8
R 2001	109P060020	NETWORK	1/8W 56Ω-JX4
R 2002	109P060020	NETWORK	1/8W 56Ω-JX4
R 2003	109P060020	NETWORK	1/8W 56Ω-JX4
R 2004	109P060020	NETWORK	1/8W 56Ω-JX4
R 3100	103P542030	NETWORK	1/8W 680 Ω-JX4
R 4049	103P544050	NETWORK	1/8W 47KΩ-JX4
R 4100	103P562070	NETWORK	1/8W 1.5KΩ-JX6
R 4120	103P543030	NETWORK	1/8W 4.7KΩ-JX4
		SWITCHES	
S 1001	431C078010	DIP SWITCH	
S 3001	431C077010	SLIDE SWITCH	
S 3002	431C077010	SLIDE SWITCH	
S 3003	431C077010	SLIDE SWITCH	
S 3004	431C077010	SLIDE SWITCH	
S 4001	431C078010	DIP SWITCH	
S 8001	432P101040	KEY BOARD SWITCH	
S 8002	432P101010	KEY BOARD SWITCH	
S 8003	432P101010	KEY BOARD SWITCH	
S 8004	432P101040	KEY BOARD SWITCH	
S 8005	432P101040	KEY BOARD SWITCH	
S 8006	432P101040	KEY BOARD SWITCH	
S 8007	432P101040	KEY BOARD SWITCH	
S 8008	432P101010	KEY BOARD SWITCH	
S 8009	432P101010	KEY BOARD SWITCH	
S 8010	432P101010	KEY BOARD SWITCH	
S 8011	432P101010	KEY BOARD SWITCH	
S 8012	432P101010	KEY BOARD SWITCH	
S 8013	432P101010	KEY BOARD SWITCH	
S 8014	431C068030	SLIDE SWITCH	
S 8015	431C067010	SLIDE SWITCH	
S 8016	431C068030	SLIDE SWITCH	
		MISCELLANEOUS	
	451C101010	EARPHONE JACK	
IC1004	449P013090	IC SOCKET	
IC2009	449P013090	IC SOCKET	
J 8001	451C094010	HEADPHONE JACK	
		PRINTED CIRCUIT BOARD ASSY'S	
	936C006002	CPU PCB ASSY	

SYMBOL NO.	PARTS NO.	PARTS NAME	DESCRIPTION
	936D010001	MOTHER PCB ASSY	
	930C221060	RAM PCB ASSY	
	930C222020	RGB PCB ASSY	
	920D124010	SW PCB ASSY	
	930C223040	VIDEO PCB ASSY	
		COSMETIC PARTS	
	242C795090	AC POWER CORD	
		PACKING PARTS AND ACCESSORY	
	803B568010	PACKLNG CUSHION	
	871C833020	INSTRUCTION BOOK	
	831D169010	PACKING BAG	
	831D183040	PACKING BAG	
	831D199070	PACKING BAG	
	802C838070	PACKING CASE	
	242D232020	CABLE-BNC	
	857P001010	CLEANING SHEET	
	939P221020	REMOTE HAND UNIT	

SYMBOL NO.	PARTS NO.	PARTS NAME	DESCRIPTION

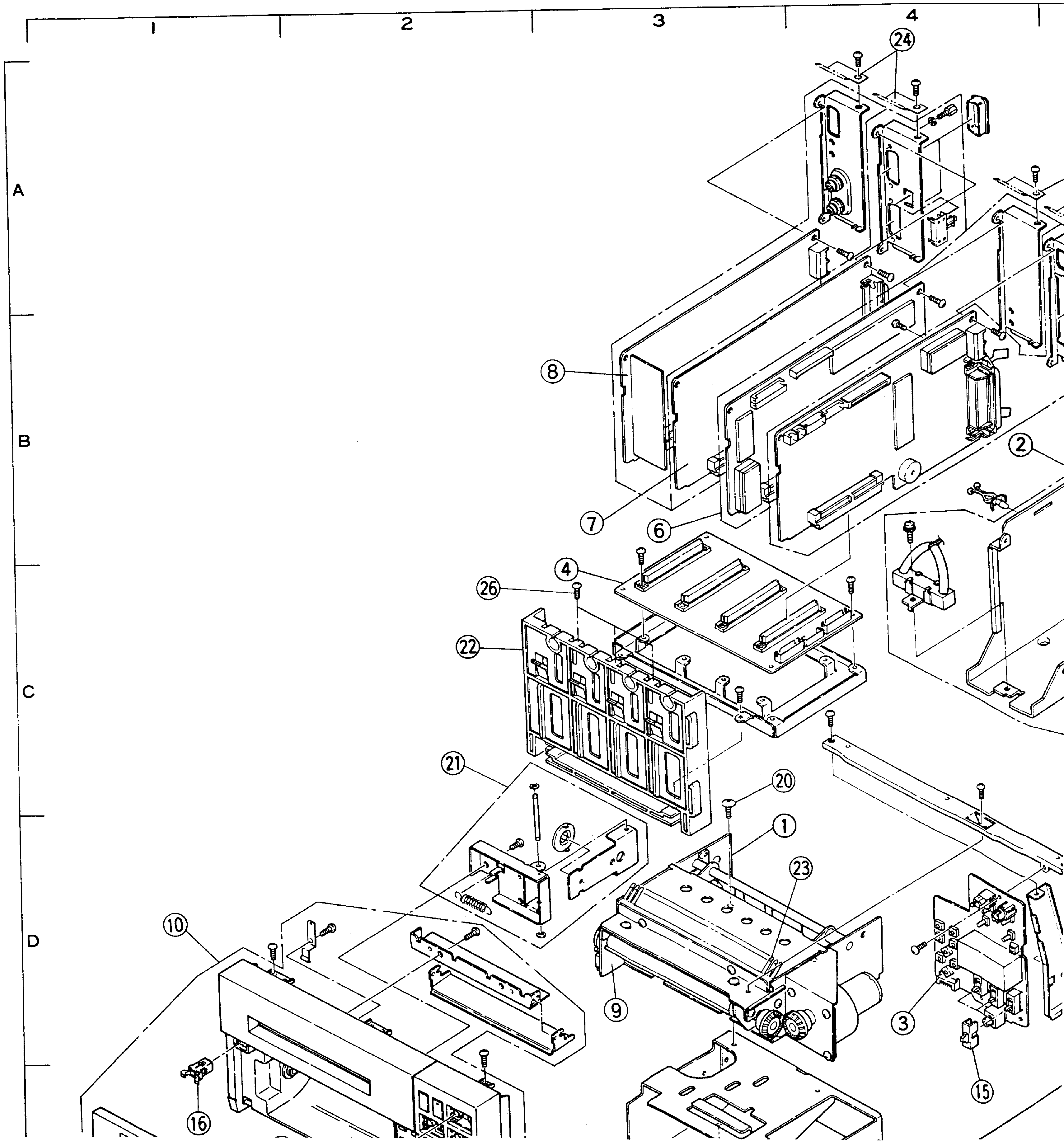
POWER UNIT

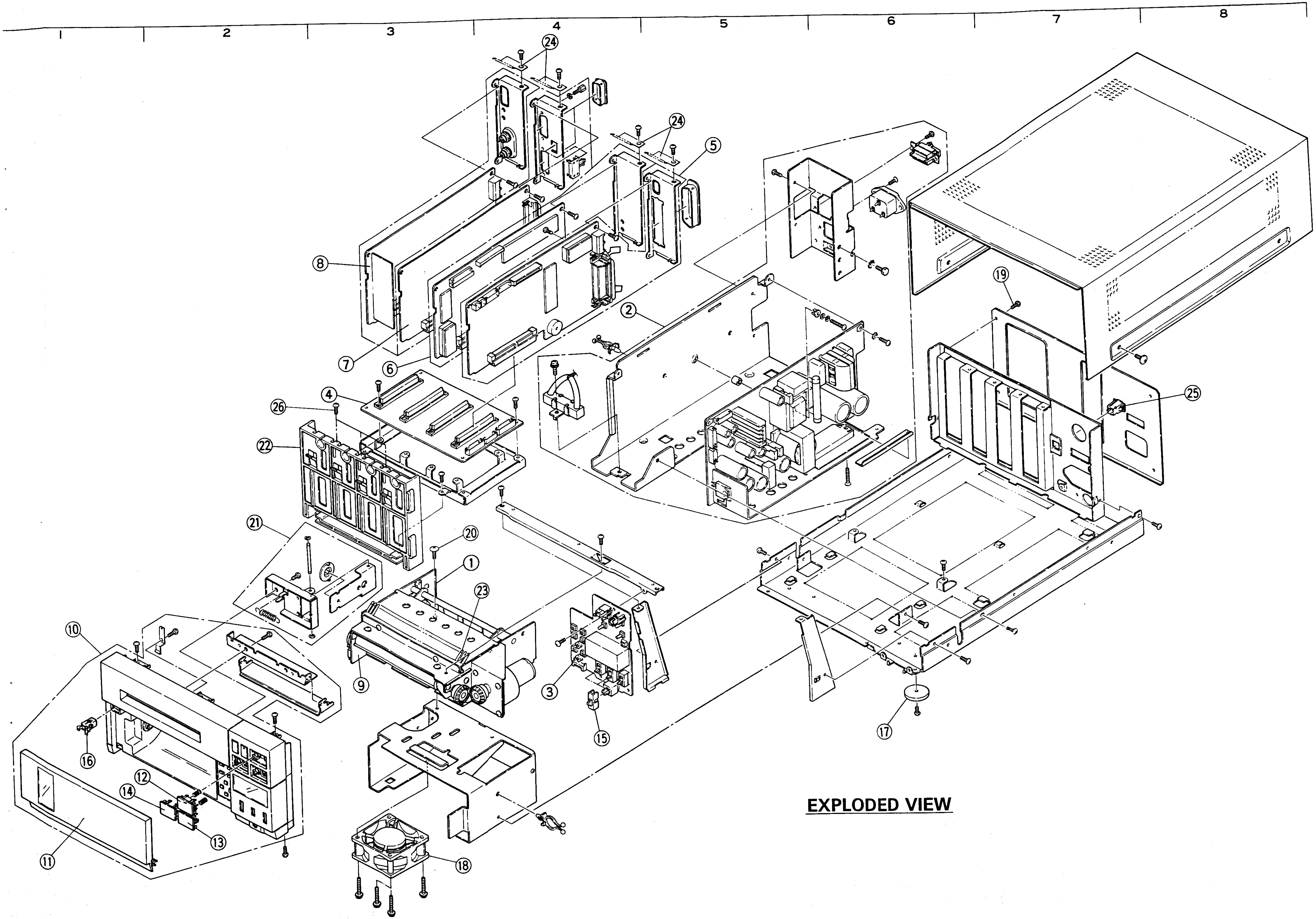
SYMBOL NO.	PARTS NO.	PARTS NAME	DESCRIPTION
		INTEGRATED CIRCUIT	
⚠IC01	266D098070	STX-7309	MAIN SW, -REG
IC30	266P520010	M5236L	+22V REG
IC31	266D098080	PQ12R05	+12V REG1
IC32	266D098080	PQ12R05	+12V REG2
IC33	266D098090	SI3052V	+5V REG
IC34	266P919010	7912	-12V REG
IC35	266D099010	7820	+20 REG
IC36	266P932010	7805	
IC37	266D099020	74LS112	POWER REMOTE
		TRANSISTORS	
Q02	260D174050	2SC2655-1	MAIN-REG PROTECT
Q31	260P256040	2SA1115-E, F	OVER-LOAD-DET
Q32	260D210040	2SA1265N-0	+22V-OUT
Q33	260D210010	2SA1382	+22V DRIVE
Q35	260P338040	2SC2603-E, F	+22V-ON/OFF
Q36	260P338040	2SC2603-E, F	POWER-RELAY-DRIVE2
Q37	260P256040	2SA1115-E, F	POWER-RELAY-DRIVE1
Q38	260P338040	2SC2603-E, F	ON/OFF AMP2
Q39	260P338040	2SC2603-E, F	ON/OFF AMP1
Q40	260P338040	2SC2603-E, F	PROTECT-AMP
		DIODES	
⚠D01	264P512010	RBV408	
D02	264D119060	RG-1C	
D03	264D111020	EU02	
D04	264D111020	EU02	
D30	264D100020	ESAC92M-02	D10LCA20
D31	264D119070	HZ33-2	
D32	264P045080	1S2471	
D33	264P045080	1S2471	
D34	264P045080	1S2471	
D35	264P045080	1S2471	
D36	264P045080	1S2471	
D37	264P045080	1S2471	
D38	264D119030	ERC90M02	
D39	264D091020	HZ12C	
D40	264P045080	1S2471	
D41	264D119030	ERC90M02	
D42	264P341070	HZ6C2	
D43	264P045080	1S2471	
D44	264D119020	RL2Z	
D45	264P543010	EG01	
D47	264P508010	S1WB(A)10	
D48	264D119080	EM01Z	
D49	264P045080	1S2471	
D50	264P045080	1S2471	
D51	264P045080	1S2471	
D55	264D119090	HZ11CP	
D56	264D119090	HZ11CP	
D57	264D119090	HZ11CP	
		COILS	
L30	325D076040	2.2μH	
L31	325D076030	4.7μH	
L32	325D076030	4.7μH	
L33	325D076020	2.2μH	
L34	325D076020	2.2μH	
		FILTERS	
⚠L901	351D040020	LINE FILTER	ELF18D850T
		TRANSFORMERS	
⚠T901	350D040030	TRANSFORMER	D081-259
⚠T902	350D040050	TRANSFORMER	D081-263
		VARIABLE RESISTORS	
VR01	127C191020	VR-SEMIFIXED	B 100kΩ
VR30	127D005010	VR-SEMIFIXED	B 2kΩ
		RESISTORS	
R15	103P370080	FUSE	1/4W 39Ω-J
R16	103P378040	FUSE	1/4W 2.2Ω-J
R18	102D002040	WIRE	10W 8.2Ω-J
R43	103P370010	FUSE	1/4W 10Ω-J
R65	103P370010	FUSE	1/4W 10Ω-J
		CAPACITORS	
⚠C901	189D144010	C-MP	AC250V 0.2μF-M
⚠C902	189D144020	C-MP	AC250V 0.1μF-M
⚠C903	142D001020	CERAMIC	DE7100F 2200pF VAI/ ECK DNS2200pF E
⚠C904	142D001020	CERAMIC	DE7100F 2200pF VAI/ ECK DNS2200pF E
⚠C923	142D001040	CERAMIC	DE7100F 4700pF VAI/ ECK DNS4700pF E
⚠C924	142D001040	CERAMIC	DE7100F 4700pF VAI/ ECK DNS4700pF E
		MISCELLANEOUS	
⚠ S991	433D008010	SWITCH-SEESAW	EST-15702V
⚠CN991	409D087010	AC INLEY	SOT-16
⚠ K01	287D026030	RELAY	DG24D1-0(M)
⚠ K901	287D026040	RELAY	DH5D1-0(M)
⚠ F901	283D074010	FUSE	AC250V 3.15A

replacement part orders.
Serial number
nd Description

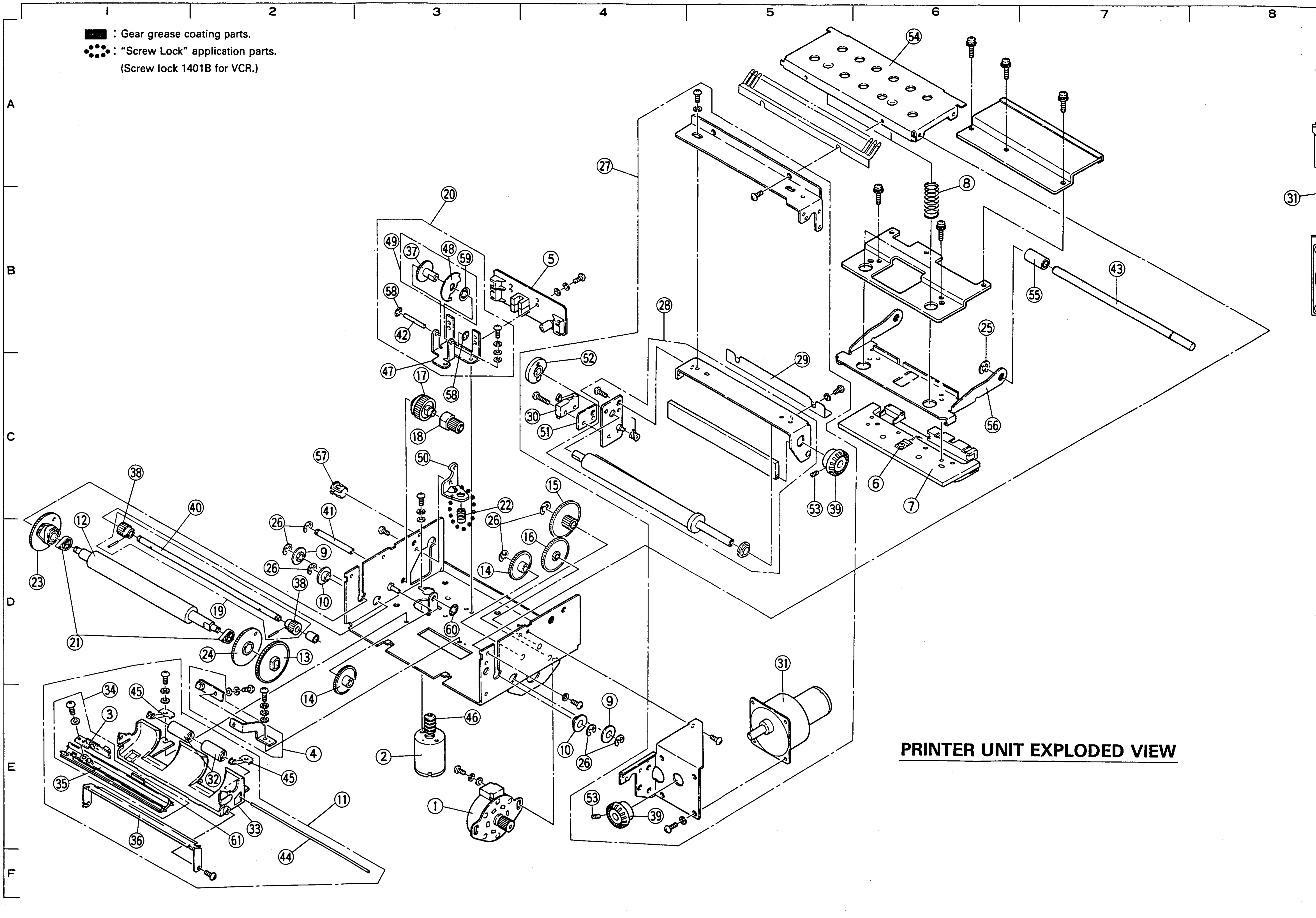
ed, delay in execution of

PARTS NO.	DESCRIPTION	ADDRESS	
939P223030		D-3	
939P224030		B-4	
920D124010		D-4	
936D010001		C-3	
936C006020		A-5	
930C221060		B-3	
930C221060		B-3	
930C223040		B-3	
589B008010		D-3	
701A399010		D-1	
702C686000		E-1	
704C583020		E-1	
704C584030		E-2	
704C584040		E-1	
734D369010		E-4	
761C273010		E-1	
771D051010		E-6	
288P098010		E-3	
669D212020	D = 3 L = 8 83A	B-7	
669D221020	(10P)	C-3	
☆		C-2	
☆		C-2	
☆		D-3	
☆		A-4	A-5
☆		C-8	
669D222090		C-3	
734D374010			




1
2
3
4
5
6
7
8
㉔
㉔
⑤
⑧
②
⑦
⑥
④
㉖
㉒
⑲
㉕
⑳
㉑
①
㉓
⑩
⑨
③
⑮
⑰
⑯
⑫
⑭
⑬
⑪
⑱

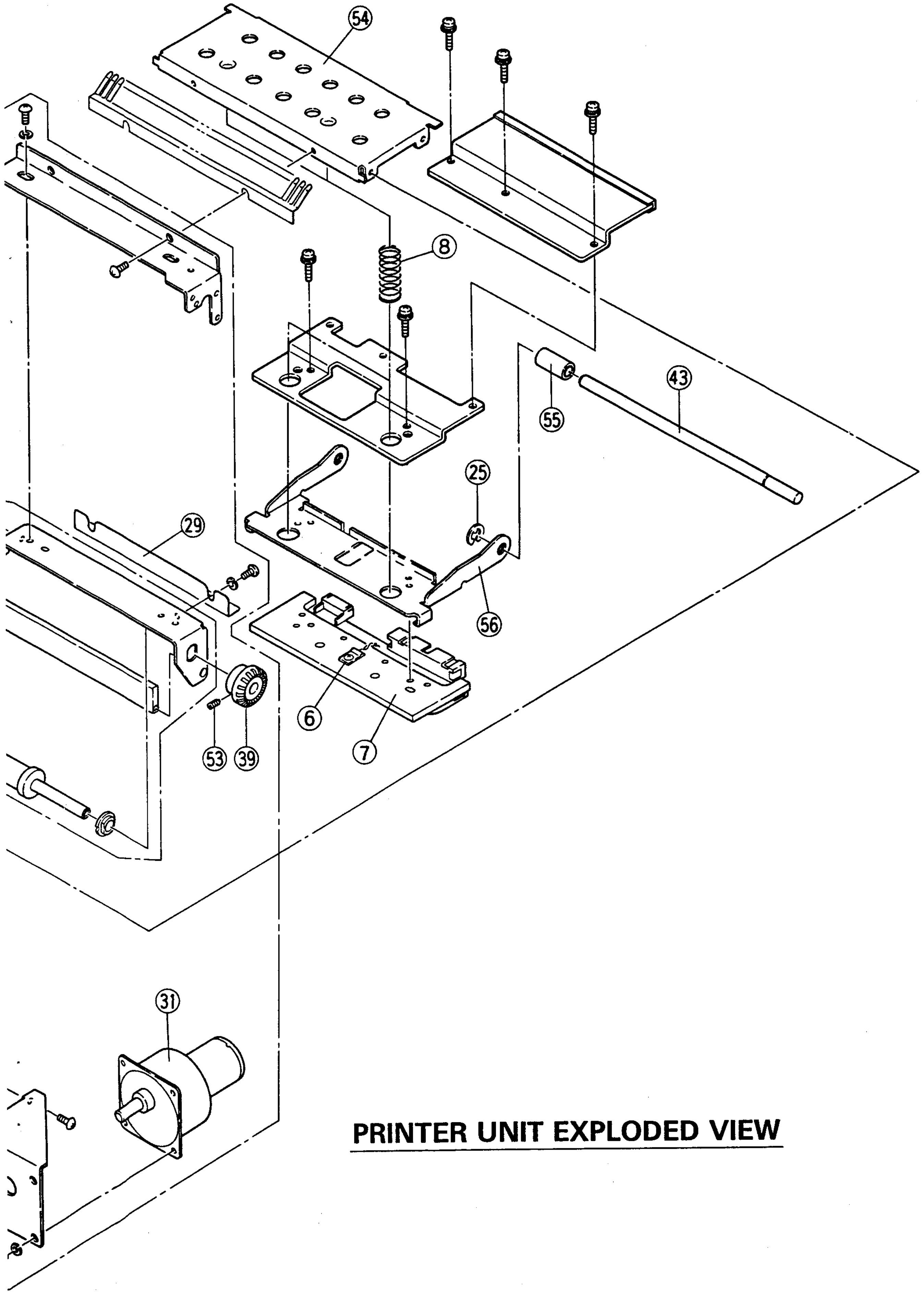
EXPLODED VIEW


1
2
3
4
5
6
7
8
A
B
C
D
E
F
54
27
8
31
20
49
37
48
59
5
43
55
58
42
47
58
28
52
29
25
17
18
30
51
56
57
50
6
7
53
39
38
40
22
15
12
26
41
26
9
16
23
26
14
10
19
38
21
60
24
13
14
34
45
3
46
9
31
2
10
26
4
45
32
35
33
11
1
53
39
61
36
44

■ : Gear grease coating parts.

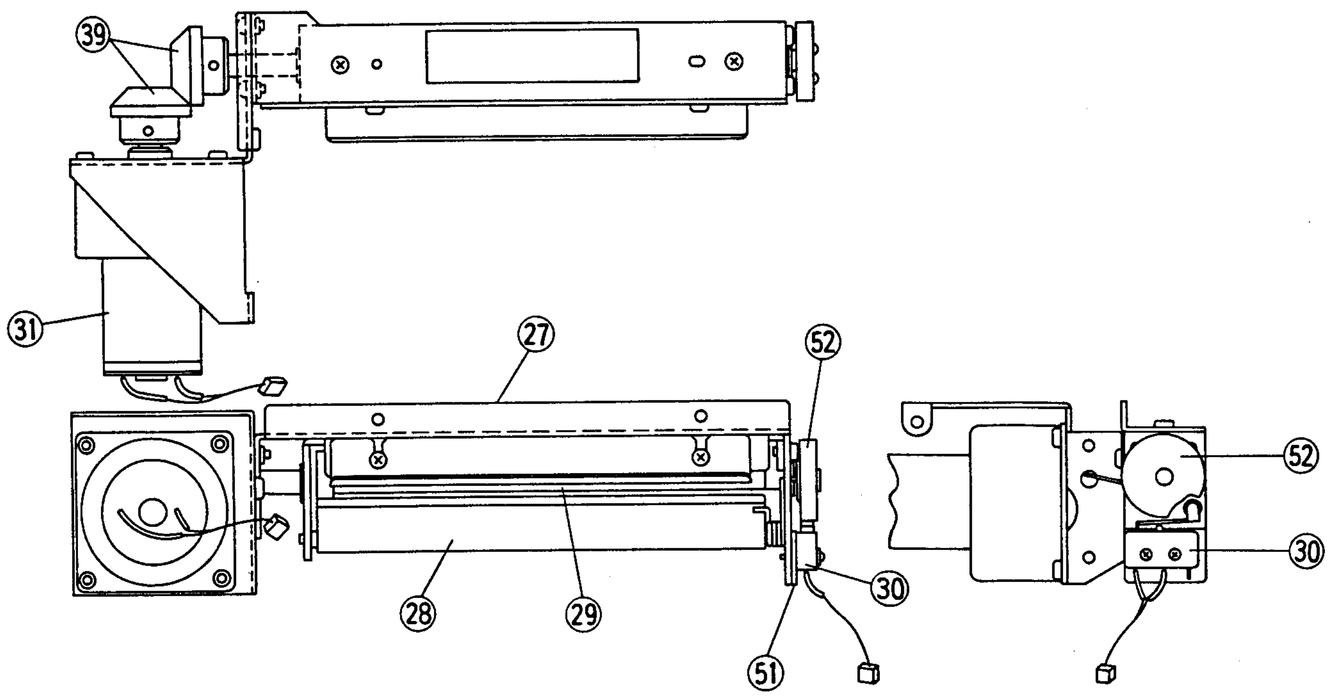
⁘ : "Screw Lock" application parts.
(Screw lock 1401B for VCR.)

PRINTER UNIT EXPLODED VIEW

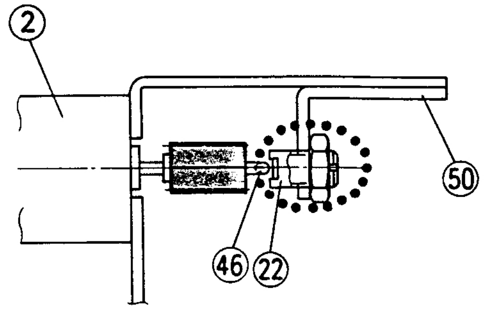

54
8
43
55
25
29
56
6
7
53
39
31

PRINTER UNIT EXPLODED VIEW

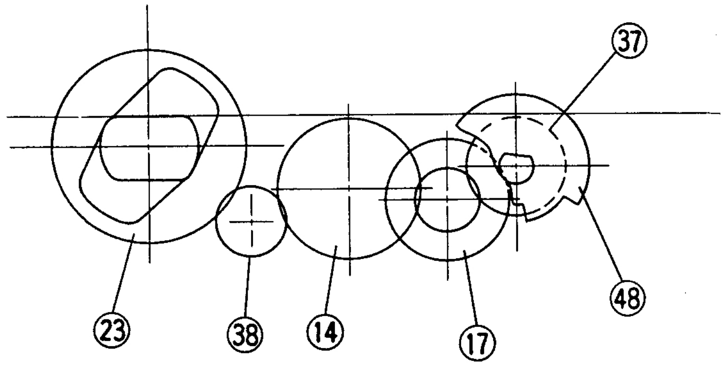
CUTTER-UNIT(㉘)


39
31
27
52
52
28
29
30
30
51

THRUST SCREW(㉒)



Installation angle of CAM(㉓) and GEAR (㊲)


37
23
38
14
17
48

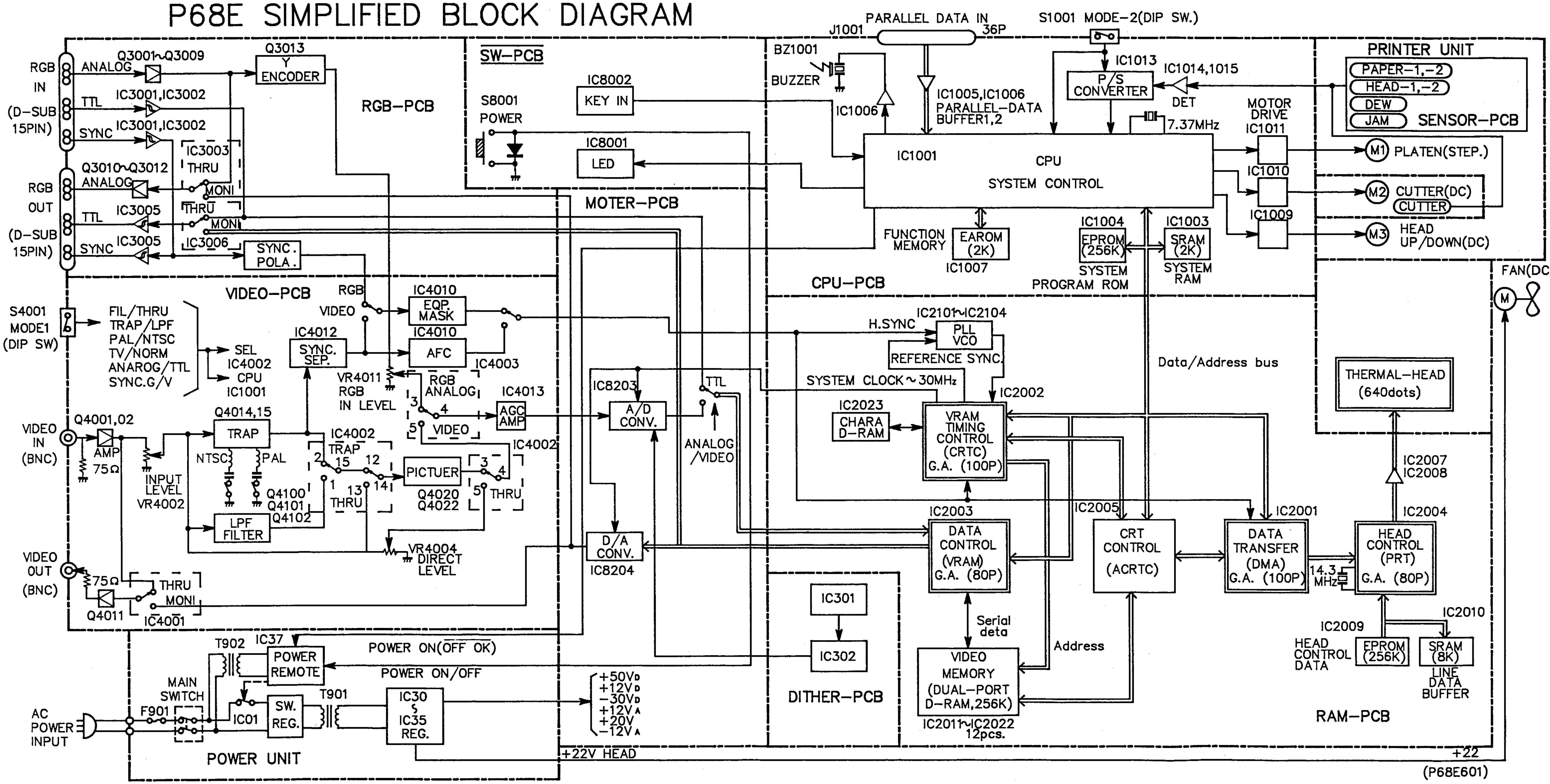
PARTS LIST

In order to expedite delivery of replacement part orders.
Specify : 1. Model number/Serial number
2. Parts number and Description
3. Quantity
Unless full information is supplied, delay in execution of orders will result.
O : New Parts

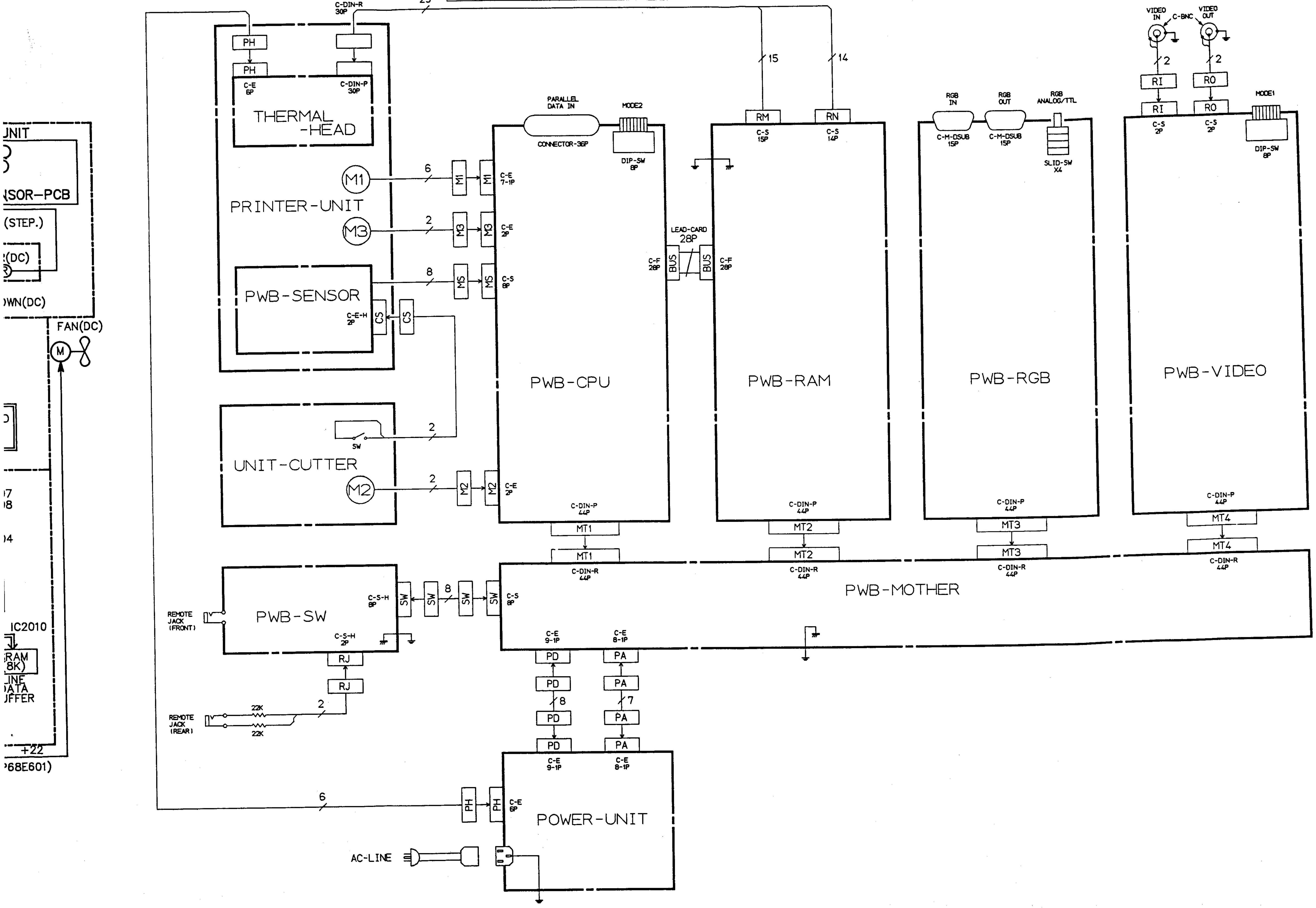
SYMBOL NO.	PARTS NAME	PARTS NO.	DESCRIPTION	ADDRESS	
	PRINTER UNIT	939P223030			
1	STEP MOTOR	288D017090	LQ802X006Y00	E-3	
2	LOADING MOTOR	288D021010	LF423Y554G10	E-3	
3	SENSOR ASSY (PS1)	299D169030	LF425W126G01	E-1	
4	SENSOR ASSY (PS2)	299D169040	LF425W125G01	E-2	
5	RELAY CARD ASSY	299D169050	LF425X124G01	B-4	
6	DEW SENSOR	299D169000	LF424Y023G01	C-6	
7	THERMAL HEAD	460D010090	LQ992C012Y00	C-6	
8	H-SPRING	571D026040	LF422S646H02	A-6	
9	C-BUSHING	621D263020	LF423M256H02	D-2	E-4
10	D-BUSHING	621D263030	LF422J641H03	D-2	E-4
11	PAPER GUIDE ASSY	621D290090	LF321Y411G02	E-2	
12	PLATEN ROLLER ASSY	621D291020	LK9900666U00	D-1	
13	A-GEAR	621D262010	LF420G750H03	D-2	
14	C-GEAR	621D262030	LF420G752H02	D-3	E-2
15	D-GEAR	621D262040	LF420Y418H01	C-4	
16	E-GEAR	621D262050	LF420Y419H01	D-4	
17	F-GEAR	621D446050	LF321M681H01	C-3	
18	H-GEAR	621D446060	LF423M360H01	C-3	
19	GEAR ASSY	621D446040	LF422Y640G01	D-2	
20	BRACKET ASSY	621D537010	LF423Y375G01	B-3	
21	AUXILARY GUIDE	621D538010	LF423M553H02	D-1	
22	THRUST SCREW ASSY	621D539010	LF423Y393G01	C-3	
23	CAM (L)	621D540010	LF220M555H02	D-1	
24	CAM (R)	621D540020	LF220M554H02	D-2	
25	E-RING	685D023090	LK885D000U00	B-6	
26	E-RING	685D026010	LK8877000U00	D-2 E-4	C-3
27	UNIT-CUTTER	589B008010		A-4	
28	ROTARY CUTTER	589C035010		B-4	
29	PAPER GUIDE	595D977010		C-5	
30	MICRO SWITCH	436P018010		C-4	
31	GEAR MOTOR	288P086010		D-5	
32	ROLLER	☆	LF422M643H02	E-2	
33	A PAPER GUIDE	☆	LF220M360H05	E-2	
34	C PAPER GUIDE ASSY	☆	LF321Y410G01	E-1	
35	C PAPER GUIDE	☆	LF321M367H02	E-1	
36	D PAPER GUIDE	☆	LF321Z374H06	F-1	
37	G GEAR	☆	LF422G632H03	B-3	
38	J GEAR	☆	LF422G630H03	C-1	D-2
39	BEVEL GEAR	☆		C-5	E-4
40	E-SHAFT	☆	LF422J635H04	D-1	
41	F-SHAFT	☆	LF422J636H04	D-2	
42	G-SHAFT	☆	LF422J637H02	B-3	
43	H-SHAFT	☆	LF422J638H02	B-7	
44	R-SHAFT	☆	LF422J639H03	F-2	
45	SPRING	☆	LF321S623H04	E-1	E-2
46	AUXILIARY SHAFT	☆	LF423J390H01	E-3	
47	HOLDER (PCB)	☆	LF321Z372H01	C-3	
48	INTERRUPTION PLATE	☆	LF422Z648H03	B-3	
49	HOLDER (INTERRUPTION PLATE)	☆	LF423Y374G01	B-3	
50	SCREW TRAY STAND	☆	LF321Z482H01	C-3	
51	SPACER	☆		C-4	
52	CAM	☆		C-4	
53	SET SCREW	☆		C-5	E-4
54	COVER	☆	LF320Z917H02	A-6	
55	H - SPACER	☆	LF422M645H02	B-7	
56	HEAD MOUNTING PLATE	☆	LF320Z918H05	C-6	
57	BUSHING	☆	LQ194K004Y00	C-2	
58	RETAINING RING (CS)	☆	LK9402000U00	B-3	C-3
59	RETAINING RING (CS)	☆	LK9406000U00	B-3	
60	RETAINING RING (CS)	☆	LK9404000U00	D-3	
61	SENSOR PLATEN ASSY	299D169060	LF425Y130G01	E-1	

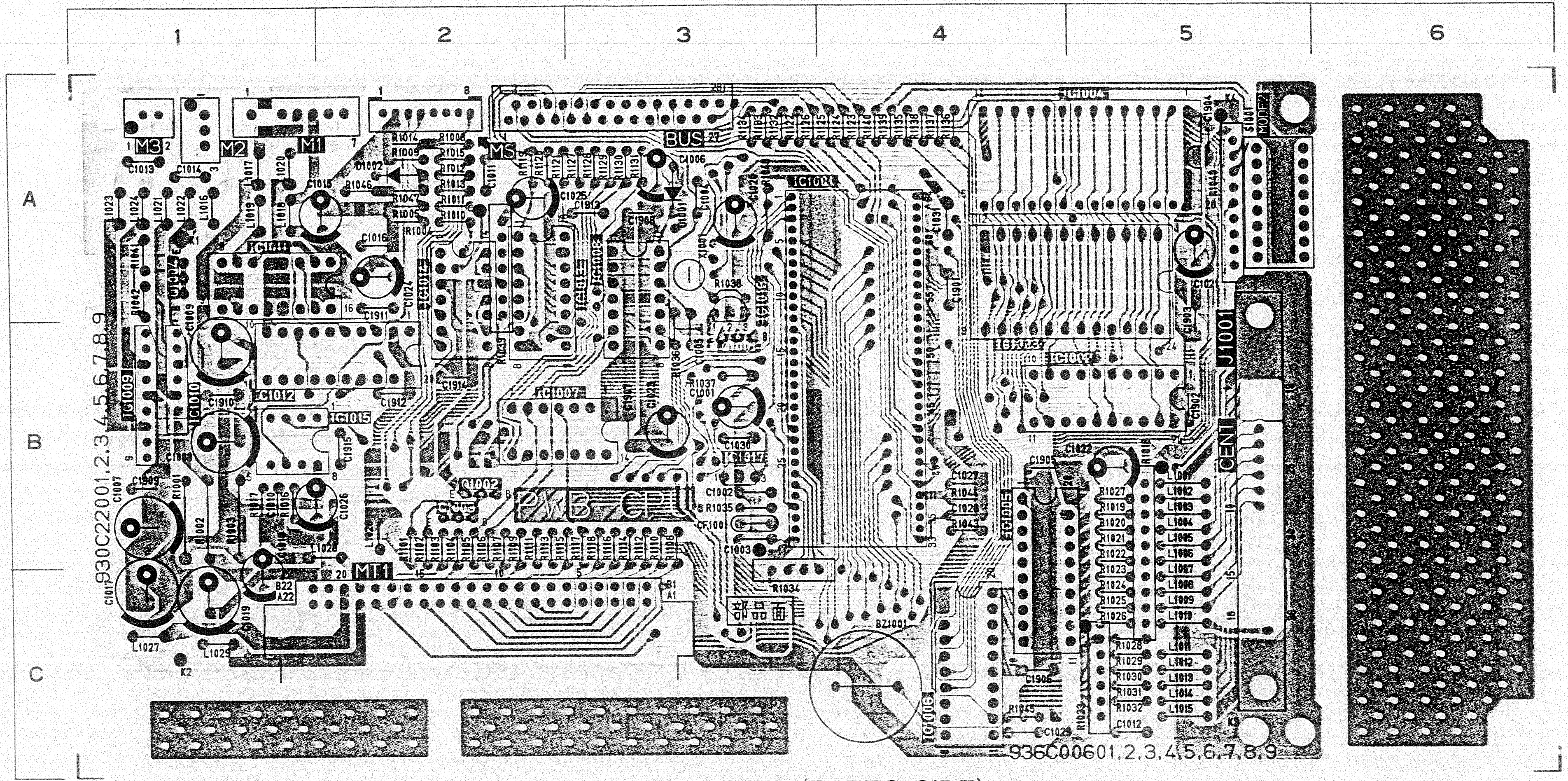
☆ : Not stocked item

P68E SIMPLIFIED BLOCK DIAGRAM


RGB IN (D-SUB 15PIN)
ANALOG
Q3001~Q3009
Q3013 Y ENCODER
TTL
IC3001,IC3002
SYNC
IC3001,IC3002
IC3003 THRU MONI
RGB-PCB
RGB OUT (D-SUB 15PIN)
Q3010~Q3012
ANALOG
TTL
IC3005
THRU
MONI
SYNC
IC3005
IC3006
SYNC. POLA.
SW-PCB
S8001 POWER
IC8002 KEY IN
IC8001 LED
MOTER-PCB
J1001
PARALLEL DATA IN
36P
S1001 MODE-2(DIP SW.)
BZ1001
BUZZER
IC1006
IC1005,IC1006 PARALLEL-DATA BUFFER1,2
IC1013
P/S CONVERTER
IC1014,1015
DET
7.37MHz
IC1001
CPU SYSTEM CONTROL
FUNCTION MEMORY
EAROM (2K)
IC1007
IC1004 EPROM (256K) SYSTEM PROGRAM ROM
IC1003 SRAM (2K) SYSTEM RAM
CPU-PCB
PRINTER UNIT
PAPER-1,-2
HEAD-1,-2
DEW
JAM
SENSOR-PCB
MOTOR DRIVE
IC1011
M1 PLATEN(STEP.)
IC1010
M2 CUTTER(DC)
CUTTER
IC1009
M3 HEAD UP/DOWN(DC)
FAN(DC)
M
S4001 MODE1 (DIP SW)
FIL/THRU
TRAP/LPF
PAL/NTSC
TV/NORM
ANAROG/TTL
SYNC.G/V
SEL IC4002
CPU IC1001
VIDEO-PCB
RGB
VIDEO
IC4010 EQP. MASK
IC4012 SYNC. SEP.
IC4010 AFC
IC4003
VR4011 RGB IN LEVEL
RGB ANALOG
VIDEO
IC4013 AGC AMP
VIDEO IN (BNC)
Q4001,02 AMP
75Ω
INPUT LEVEL VR4002
Q4014,15 TRAP
NTSC
PAL
Q4100
Q4101
Q4102
LPF FILTER
IC4002 TRAP
THRU
PICTUER
Q4020
Q4022
IC4002
THRU
VR4004 DIRECT LEVEL
VIDEO OUT (BNC)
75Ω
Q4011
THRU
MONI
IC4001
IC8203 A/D CONV.
TTL
ANALOG /VIDEO
D/A CONV.
IC8204
IC2101~IC2104
H.SYNC
PLL VCO
REFERENCE SYNC.
SYSTEM CLOCK ~ 30MHz
IC2002
IC2023 CHARA D-RAM
VRAM TIMING CONTROL (CRTC) G.A. (100P)
Data/Address bus
THERMAL-HEAD (640dots)
IC2007
IC2008
IC2003
DATA CONTROL (VRAM) G.A. (80P)
IC2005
CRT CONTROL (ACRTC)
IC2001
DATA TRANSFER (DMA) G.A. (100P)
14.3 MHz
IC2004
HEAD CONTROL (PRT) G.A. (80P)
Serial deta
Address
VIDEO MEMORY (DUAL-PORT D-RAM,256K)
IC2011~IC2022 12pcs.
IC2009
HEAD CONTROL DATA
EPROM (256K)
IC2010
SRAM (8K)
LINE DATA BUFFER
RAM-PCB
IC301
IC302
DITHER-PCB
T902
IC37
POWER REMOTE
POWER ON(OFF OK)
POWER ON/OFF
MAIN SWITCH
AC POWER INPUT
F901
IC01
SW. REG.
T901
IC30 ~ IC35 REG.
+50VD
+12VD
-30VD
+12VA
+20V
-12VA
POWER UNIT
+22V HEAD
+22
(P68E601)

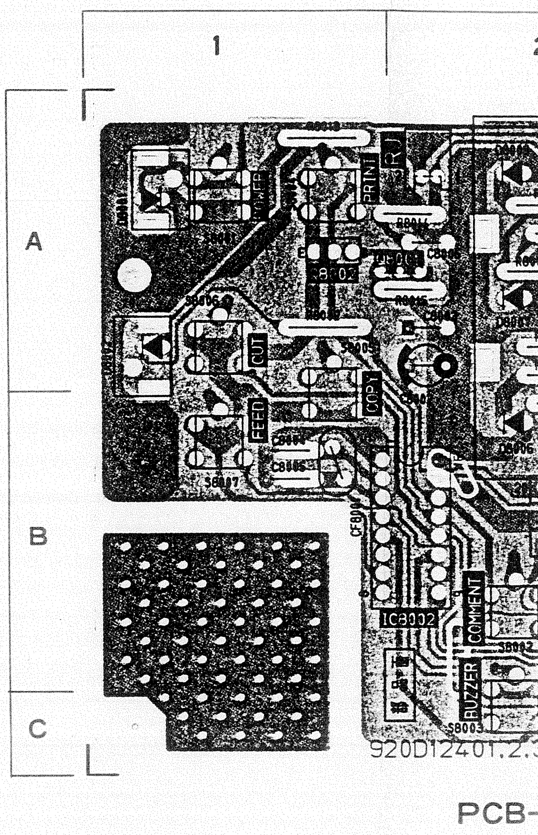
VCP P68E BLOCK-DIAGRAM


C-DIN-R
30P
29
PH
PH
C-E
6P
C-DIN-P
30P
THERMAL
-HEAD
PRINTER-UNIT
M1
M3
PWB-SENSOR
C-E-H
2P
CS
CS
UNIT-CUTTER
SW
M2
6
2
8
2
2
M1
M1
C-E
7-1P
M3
M3
C-E
2P
MS
MS
C-S
8P
M2
M2
C-E
2P
PARALLEL
DATA IN
CONNECTOR-36P
MODE2
DIP-SW
8P
PWB-CPU
C-F
28P
BUS
LEAD-CARD
28P
BUS
C-F
28P
C-DIN-P
44P
15
14
RM
RN
C-S
15P
C-S
14P
PWB-RAM
C-DIN-P
44P
RGB
IN
RGB
OUT
RGB
ANALOG/TTL
C-M-DSUB
15P
C-M-DSUB
15P
SLID-SW
X4
PWB-RGB
C-DIN-P
44P
VIDEO
IN
C-BNC
VIDEO
OUT
2
2
RI
RO
RI
RO
C-S
2P
C-S
2P
MODE1
DIP-SW
8P
PWB-VIDEO
C-DIN-P
44P
MT1
MT1
MT2
MT2
MT3
MT3
MT4
MT4
C-DIN-R
44P
C-DIN-R
44P
C-DIN-R
44P
C-DIN-R
44P
PWB-MOTHER
C-S
8P
C-E
9-1P
C-E
8-1P
REMOTE
JACK
(FRONT)
PWB-SW
C-S-H
8P
C-S-H
2P
SW
SW
8
SW
SW
RJ
RJ
REMOTE
JACK
(REAR)
22K
22K
2
PD
PA
PD
PA
8
7
PD
PA
PD
PA
C-E
9-1P
C-E
8-1P
6
PH
PH
C-E
6P
POWER-UNIT
AC-LINE
UNIT
SOR-PCB
(STEP.)
(DC)
WN(DC)
FAN(DC)
M
7
8
4
IC2010
RAM
8K)
INE
ATA
FFER
+22
68E601)

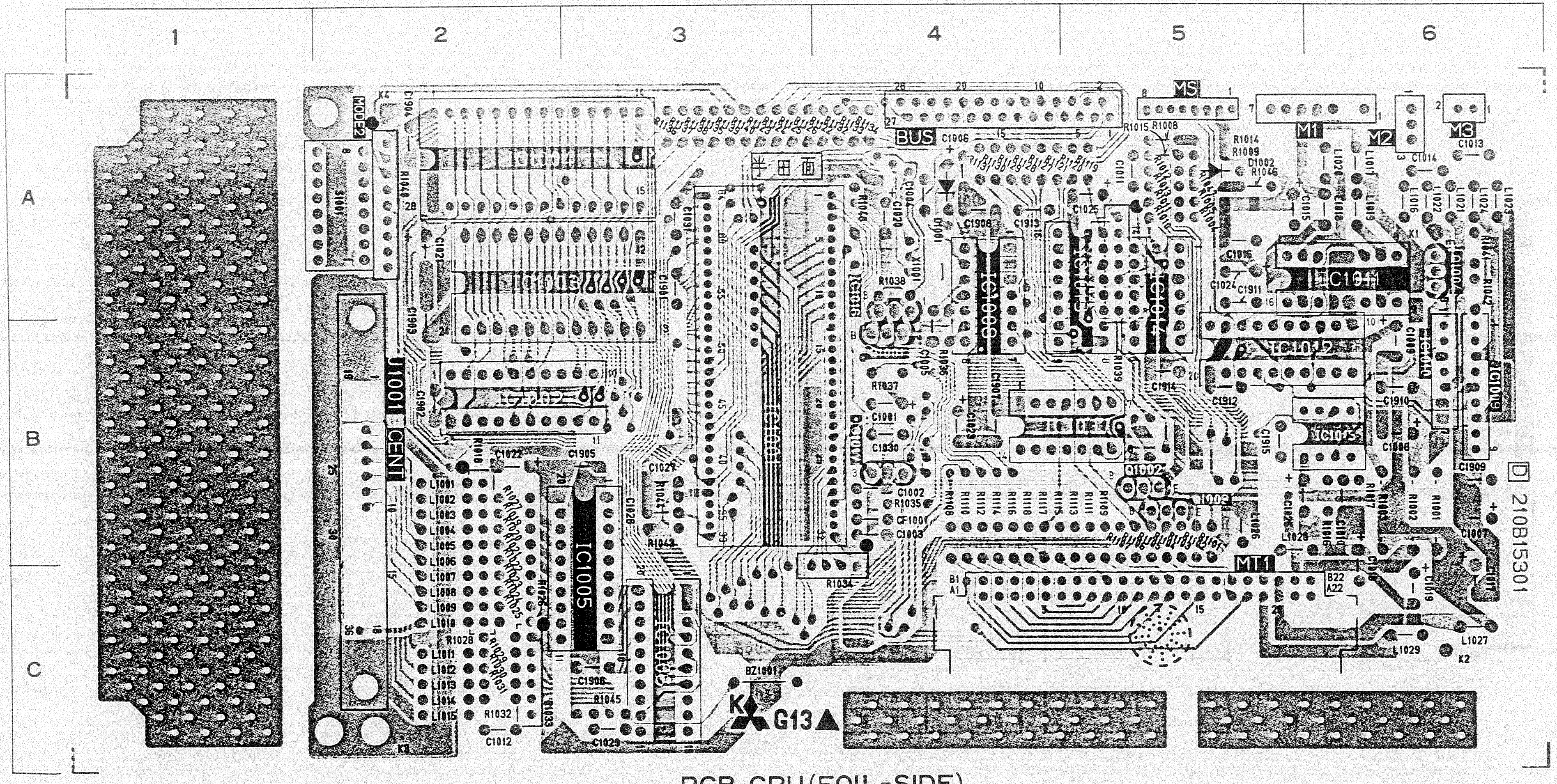

1
2
3
4
5
6
A
B
C
M3
M2
M1
MS
BUS
IC1001
IC1003
IC1007
IC1011
IC1012
IC1015
J1001
CENT
PWB-CPU
MT1
BZ1001
930C22001,2,3,4,5,6,7,8,9
936C00601,2,3,4,5,6,7,8,9

PCB-CPU(PARTS-SIDE)

SYMBOL NO.	ADDRESS
D1001	A- 3
D1002	A- 2
IC1001	B- 4
IC1002	B- 4
IC1003	A- 4
IC1004	A- 4
IC1005	C- 4
IC1006	C- 4
IC1007	B- 2
IC1008	B- 3
IC1009	B- 1
IC1010	B- 1
IC1011	A- 1
IC1012	B- 1
IC1013	A- 2
IC1014	B- 2
IC1015	B- 1
IC1016	A- 3
IC1017	B- 3
L1001	B- 5
L1002	B- 5
L1003	B- 5
L1004	B- 5
L1005	B- 5
L1006	B- 5
L1007	C- 5
L1008	C- 5
L1009	C- 5
L1010	C- 5
L1011	C- 5
L1012	C- 5
L1013	C- 5
L1014	C- 5
L1015	C- 5
L1016	A- 1
L1017	A- 1
L1018	A- 1
L1019	A- 1
L1020	A- 1
L1021	A- 1
L1022	A- 1
L1023	A- 1
L1024	A- 1
L1026	B- 2
L1027	C- 1
L1028	B- 1
L1029	C- 1
Q1001	B- 3
Q1002	B- 2
Q1003	B- 2
Q1004	A- 1
X1001	A- 3

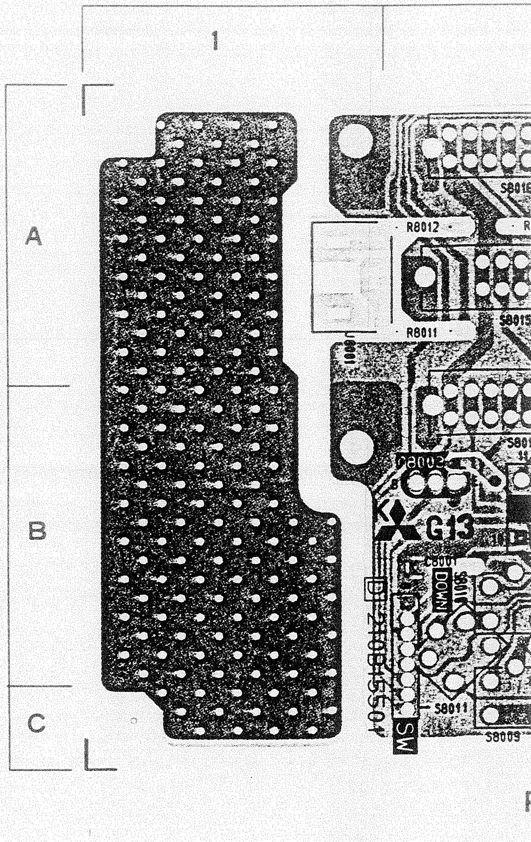

1
A
B
C
920D12401,2,3

PCB-

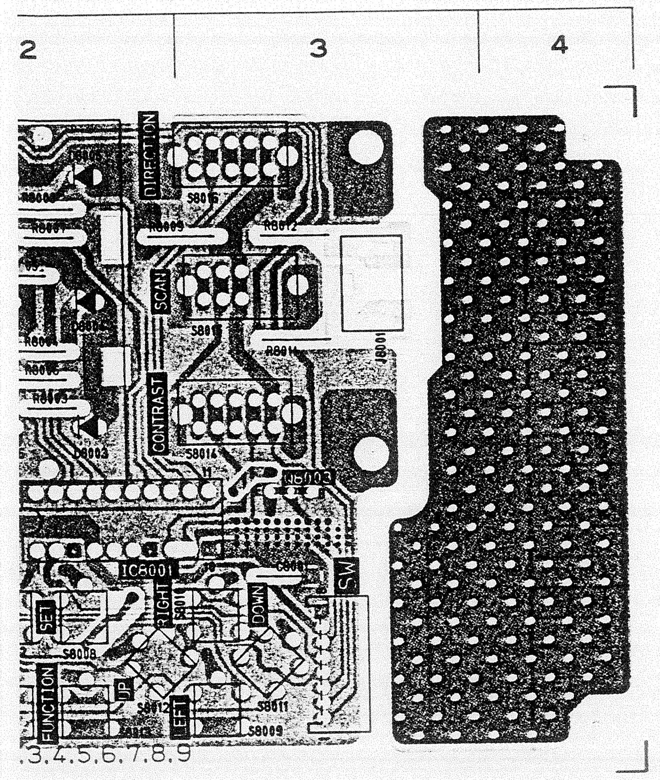

1
2
3
4
5
6
A
B
C
BUS
MS
M1
M2
M3
J1001
CENT
IC1005
IC1011
IC1012
IC1015
MT1
BZ1001
G13
210B15301

PCB-CPU(FOIL-SIDE)

SYMBOL NO.	ADDRESS
D1001	A- 4
D1002	A- 5
IC1001	B- 3
IC1002	B- 3
IC1003	A- 3
IC1004	A- 3
IC1005	C- 3
IC1006	C- 3
IC1007	B- 5
IC1008	B- 4
IC1009	B- 6
IC1010	B- 6
IC1011	A- 6
IC1012	B- 6
IC1013	B- 5
IC1014	B- 5
IC1015	B- 6
IC1016	B- 4
IC1017	B- 4
L1001	B- 2
L1002	B- 2
L1003	B- 2
L1004	B- 2
L1005	B- 2
L1006	C- 2
L1007	C- 2
L1008	C- 2
L1009	C- 2
L1010	C- 2
L1011	C- 2
L1012	C- 2
L1013	C- 2
L1014	C- 2
L1015	C- 2
L1016	A- 6
L1017	A- 6
L1018	A- 6
L1019	A- 6
L1020	A- 6
L1021	A- 6
L1022	A- 6
L1023	A- 6
L1024	A- 6
L1026	B- 5
L1027	C- 6
L1028	B- 6
L1029	C- 6
Q1001	B- 4
Q1002	B- 5
Q1003	B- 5
Q1004	A- 6
X1001	A- 4

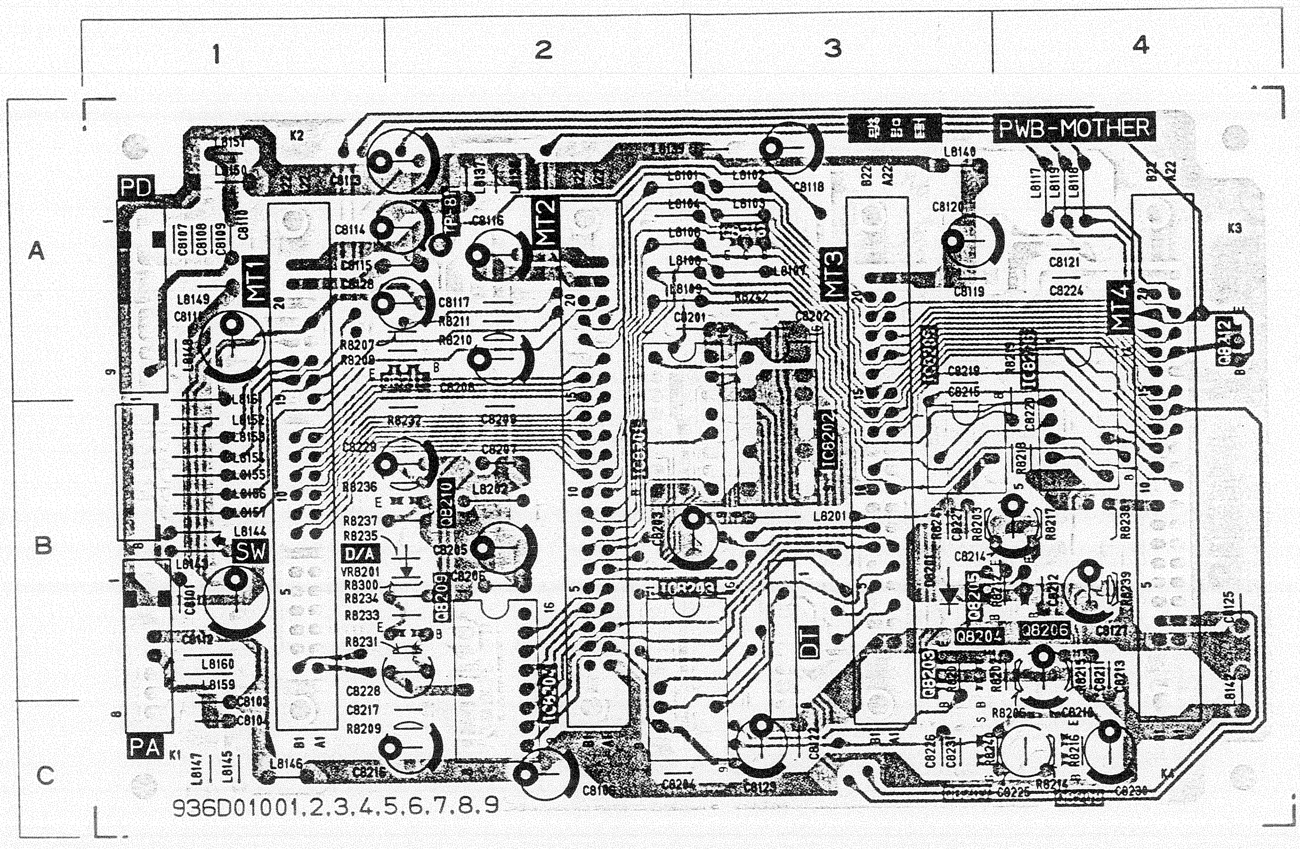


P


2
3
4
DIRECTION
SCAN
CONTRAST
IC8001
RIGHT
DOWN
SET
UP
LEFT
FUNCTION
.3,4,5,6,7,8,9

-SW (PARTS-SIDE)

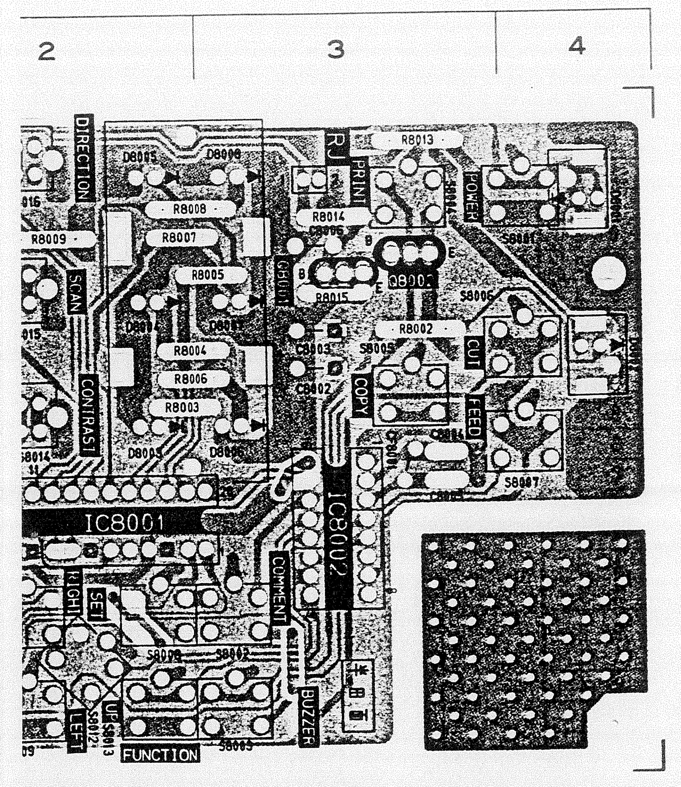
SYMBOL NO.	ADDRESS
D8001	A- 1
D8002	A- 1
D8003	B- 2
D8004	A- 2
D8005	A- 2
D8006	B- 2
D8007	A- 2
D8008	A- 2
IC8001	B- 2
IC8002	B- 2
Q8001	A- 2
Q8002	A- 1
Q8003	B- 3


1
2
3
4
A
B
C
PWB-MOTHER
PD
PA
MT1
MT2
MT3
MT4
SW
D/A
DT
K1
K2
K3
K4
936D01001,2,3,4,5,6,7,8,9

PCB-MOTHER (PARTS-SIDE)

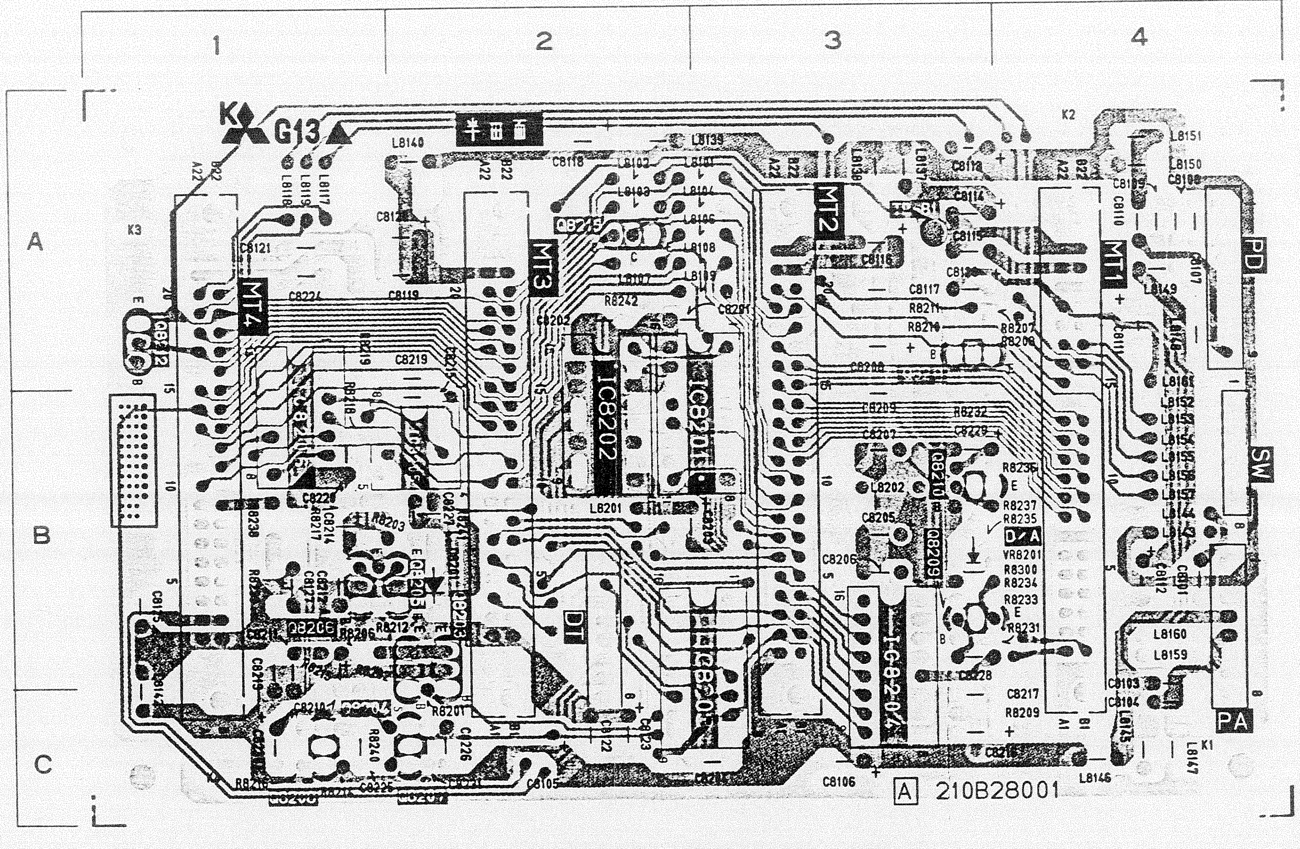
SYMBOL NO.	ADDRESS
D8201	B- 3
IC8201	B- 2
IC8202	B- 3
IC8203	C- 2
IC8204	C- 2
IC8205	B- 3
IC8206	B- 4
L8101	A- 2
L8102	A- 3
L8103	A- 3
L8104	A- 2
L8106	A- 2
L8107	A- 3
L8108	A- 2
L8109	A- 2
L8117	A- 4
L8118	A- 4
L8119	A- 4
L8137	A- 2
L8138	A- 2
L8139	A- 2
L8140	A- 3
L8142	C- 4
L8143	B- 1
L8144	B- 1
L8145	C- 1
L8146	C- 1
L8147	C- 1
L8148	A- 1

SYMBOL NO.	ADDRESS
L8149	A- 1
L8150	A- 1
L8151	A- 1
L8152	B- 1
L8153	B- 1
L8154	B- 1
L8155	B- 1
L8156	B- 1
L8157	B- 1
L8159	B- 1
L8160	B- 1
L8161	A- 1
L8201	B- 3
L8202	B- 2
Q8203	B- 3
Q8204	C- 3
Q8205	B- 3
Q8206	B- 4
Q8207	C- 3
Q8208	C- 4
Q8209	B- 2
Q8210	B- 2
Q8211	A- 2
Q8212	A- 4
Q8213	A- 3
TP-81	A- 2
VR8201	B- 1


2
3
4
DIRECTION
SCAN
CONTRAST
IC8001
IC8002
RJ
PRINT
HOME
COPY
CUT
FEED
COMMENT
BUZZER
RIGHT
SET
LEFT
UP
FUNCTION

PCB-SW (FOIL-SIDE)

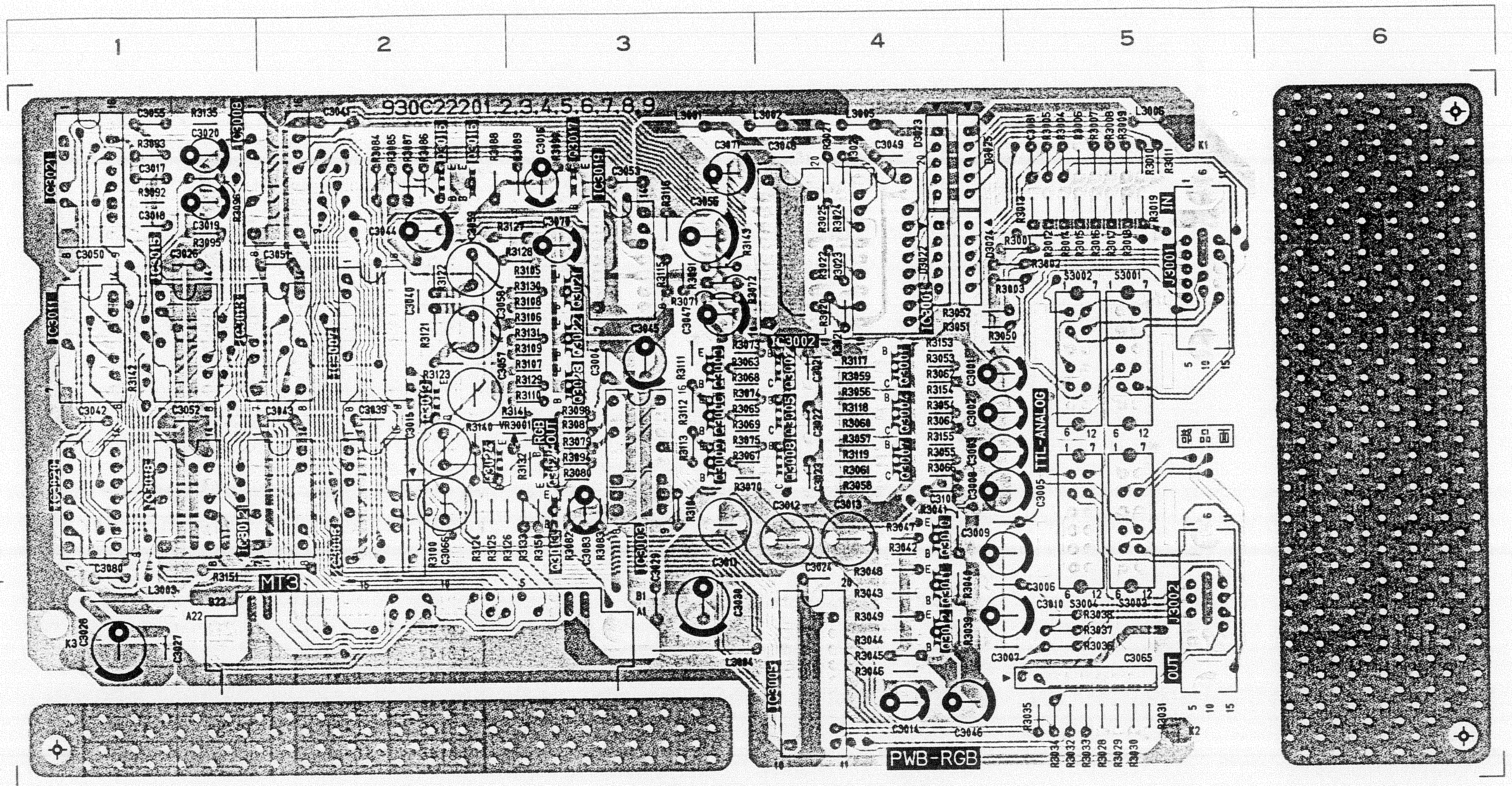
SYMBOL NO.	ADDRESS
D8001	A- 4
D8002	A- 4
D8003	B- 2
D8004	A- 2
D8005	A- 2
D8006	B- 3
D8007	A- 3
D8008	A- 3
IC8001	B- 2
IC8002	B- 3
Q8001	A- 3
Q8002	A- 3
Q8003	B- 2


1
2
3
4
A
B
C
G13
MT1
MT2
MT3
MT4
PD
SW
PA
D/A
DT
K1
K2
K3
210B28001

PCB-MOTHER (FOIL-SIDE)

SYMBOL NO.	ADDRESS
D8201	B- 2
IC8201	B- 3
IC8202	B- 2
IC8203	C- 3
IC8204	C- 3
IC8205	B- 2
IC8206	B- 1
L8101	A- 3
L8102	A- 2
L8103	A- 2
L8104	A- 3
L8106	A- 3
L8107	A- 2
L8108	A- 3
L8109	A- 3
L8117	A- 1
L8118	A- 1
L8119	A- 1
L8137	A- 3
L8138	A- 3
L8139	A- 3
L8140	A- 2
L8142	C- 1
L8143	B- 4
L8144	B- 4
L8145	C- 4
L8146	C- 4
L8147	C- 4
L8148	A- 4

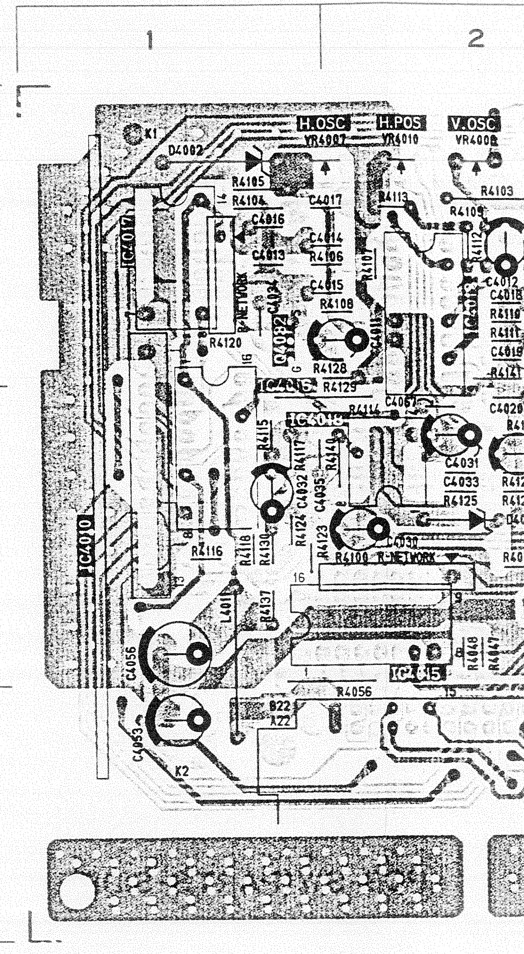
SYMBOL NO.	ADDRESS
L8149	A- 4
L8150	A- 4
L8151	A- 4
L8152	B- 4
L8153	B- 4
L8154	B- 4
L8155	B- 4
L8156	B- 4
L8157	B- 4
L8159	B- 4
L8160	B- 4
L8161	B- 4
L8201	B- 2
L8202	B- 3
Q8203	B- 2
Q8204	C- 2
Q8205	B- 2
Q8206	B- 1
Q8207	C- 2
Q8208	C- 1
Q8209	B- 3
Q8210	B- 3
Q8211	B- 3
Q8212	A- 1
Q8213	A- 2
TP-81	A- 3
VR8201	B- 4

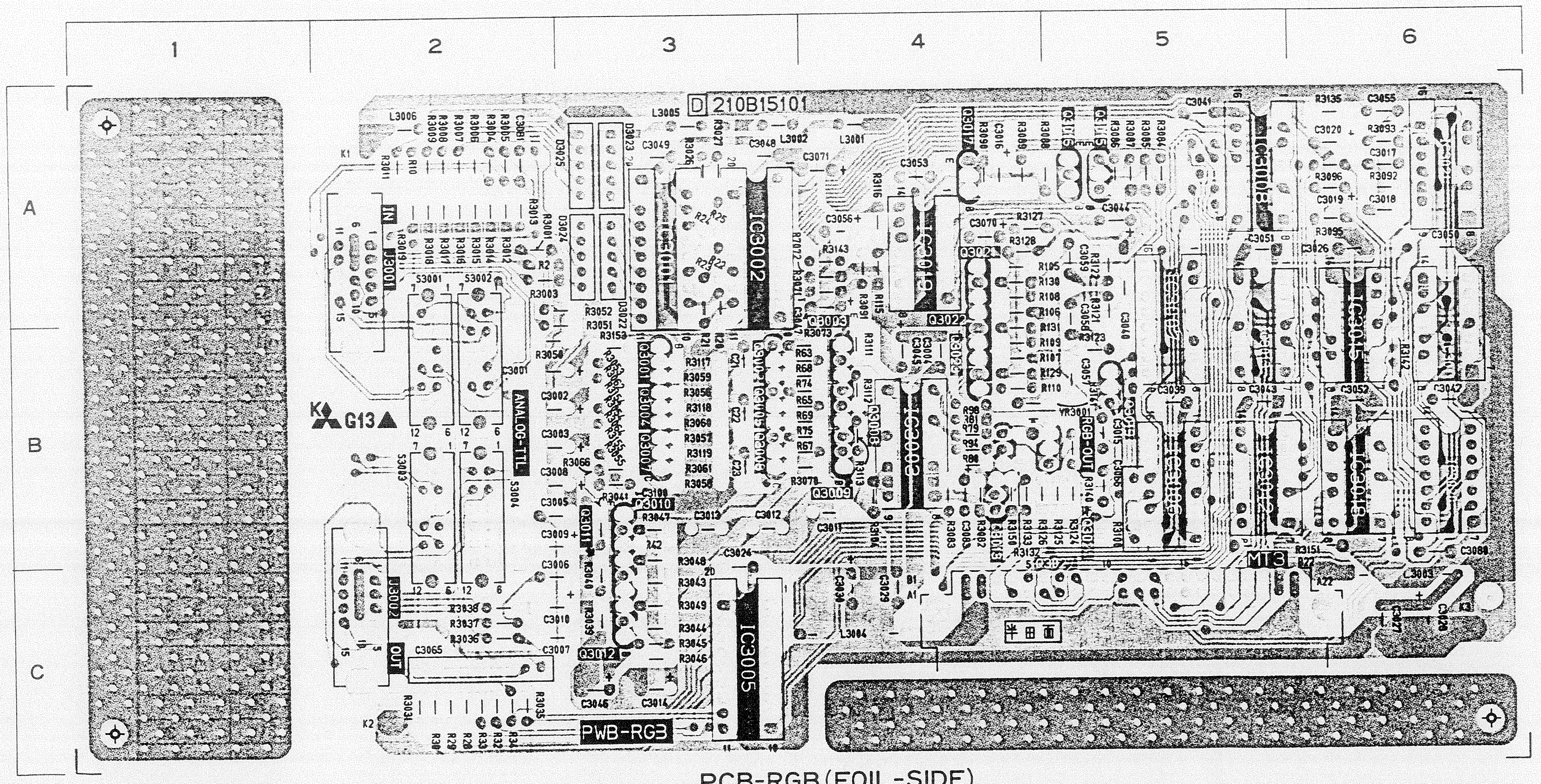

1
2
3
4
5
6
A
B
C
930C22201-2,3,4,5,6,7,8,9
MT3
TTL-ANALOG
PWB-RGB

PCB-RGB (PARTS-SIDE)

SYMBOL NO.	ADDRESS
D3022	B- 4
D3023	A- 4
D3024	A- 4
D3025	A- 4
IC3001	A- 4
IC3002	A- 4
IC3003	B- 3
IC3005	C- 4
IC3006	B- 2
IC3007	B- 2
IC3008	A- 2
IC3011	B- 1
IC3012	B- 2
IC3013	B- 2
IC3015	B- 1
IC3018	B- 1
IC3019	A- 3
IC3020	B- 1
IC3021	A- 1
L3001	A- 3
L3002	A- 3
L3003	C- 1
L3004	C- 3
L3005	A- 4

SYMBOL NO.	ADDRESS
L3006	A- 5
Q3001	B- 4
Q3002	B- 4
Q3003	B- 3
Q3004	B- 4
Q3005	B- 4
Q3006	B- 3
Q3007	B- 4
Q3008	B- 4
Q3009	B- 3
Q3010	B- 4
Q3011	B- 4
Q3012	C- 4
Q3013	B- 3
Q3015	A- 2
Q3016	A- 2
Q3017	A- 3
Q3019	B- 2
Q3021	A- 3
Q3022	B- 3
Q3023	B- 3
Q3024	B- 2
Q3027	C- 2
VR3001	B- 2

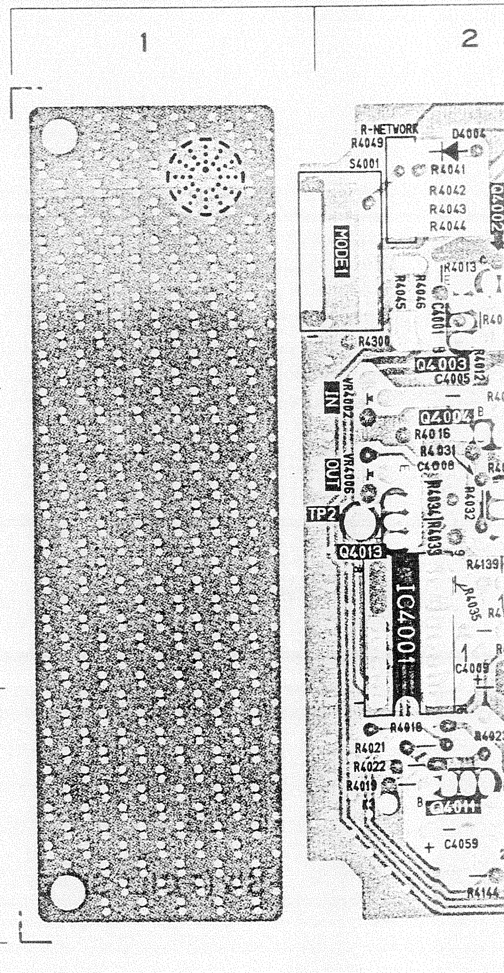

1
2
A
B
C
H.OSC
H.POS
V.OSC

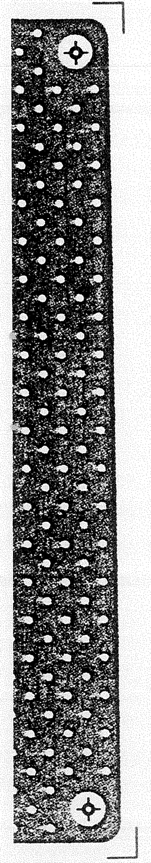

1
2
3
4
5
6
A
B
C
210B15101
G13
ANALOG-TTL
MT3
PWB-RGB

PCB-RGB (FOIL-SIDE)

SYMBOL NO.	ADDRESS
D3022	B- 3
D3023	A- 3
D3024	A- 3
D3025	A- 3
IC3001	A- 3
IC3002	A- 3
IC3003	B- 4
IC3005	C- 3
IC3006	B- 5
IC3007	B- 5
IC3008	A- 5
IC3011	B- 6
IC3012	B- 5
IC3013	B- 5
IC3015	B- 6
IC3018	B- 6
IC3019	A- 4
IC3020	B- 6
IC3021	A- 6
L3001	A- 4
L3002	A- 4
L3003	C- 6
L3004	C- 4
L3005	A- 3

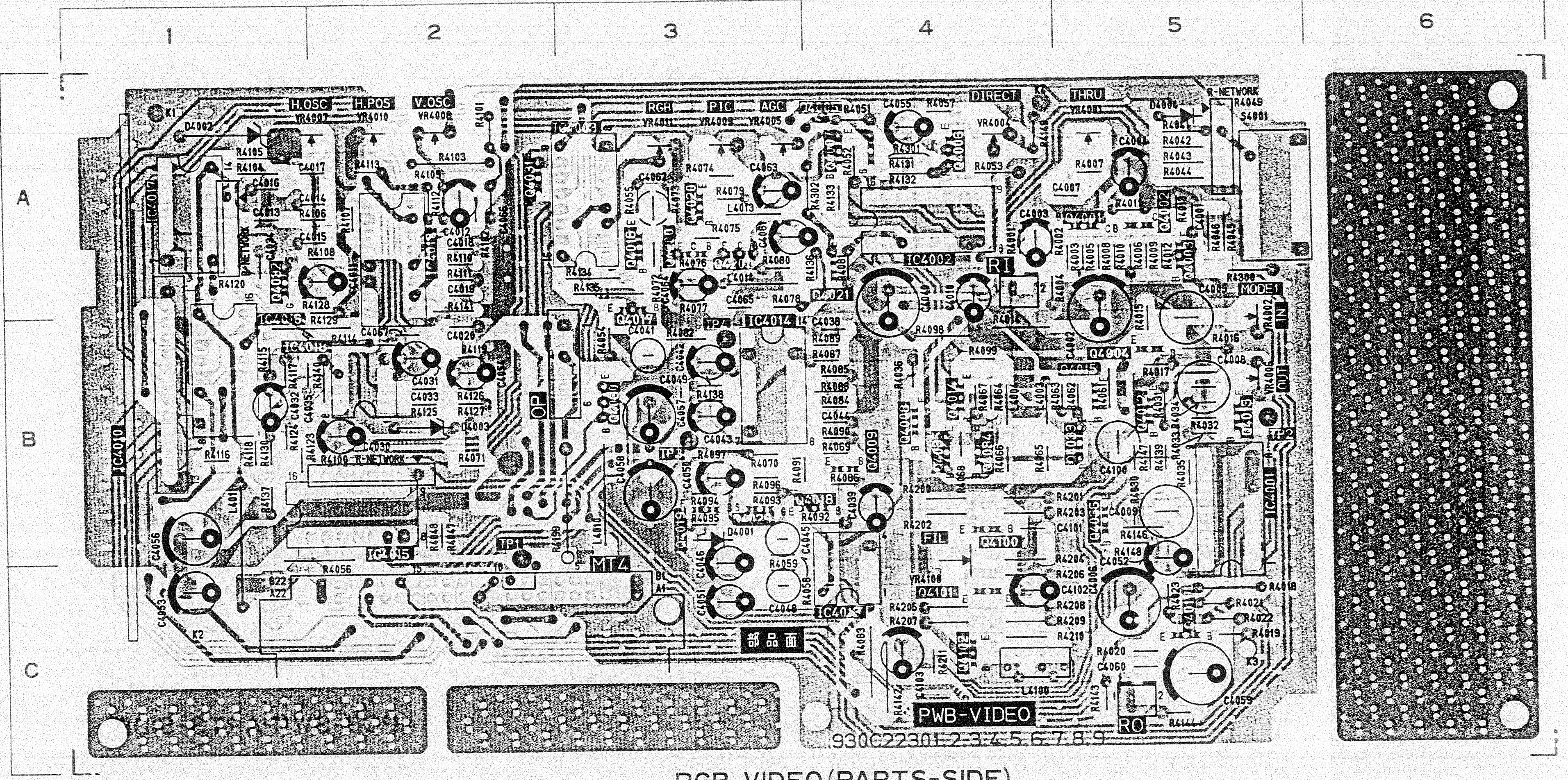
SYMBOL NO.	ADDRESS
L3006	A- 2
Q3001	B- 3
Q3002	B- 3
Q3003	B- 4
Q3004	B- 3
Q3005	B- 3
Q3006	B- 4
Q3007	B- 3
Q3008	B- 3
Q3009	B- 4
Q3010	B- 3
Q3011	B- 3
Q3012	C- 3
Q3013	C- 4
Q3015	A- 5
Q3016	A- 5
Q3017	A- 4
Q3019	B- 5
Q3021	A- 4
Q3022	B- 4
Q3023	B- 4
Q3024	C- 5
Q3027	C- 5
VR3001	B- 5


1
2
A
B
C
R-NETWORK
IC4001



SYMBOL NO.	ADDRESS
D3022	B- 4
D3023	A- 4
D3024	A- 4
D3025	A- 4
IC3001	A- 4
IC3002	A- 4
IC3003	B- 3
IC3005	C- 4
IC3006	B- 2
IC3007	B- 2
IC3008	A- 2
IC3011	B- 1
IC3012	B- 2
IC3013	B- 2
IC3015	B- 1
IC3018	B- 1
IC3019	A- 3
IC3020	B- 1
IC3021	A- 1
L3001	A- 3
L3002	A- 3
L3003	C- 1
L3004	C- 3
L3005	A- 4

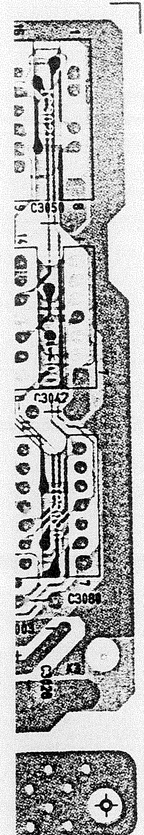
SYMBOL NO.	ADDRESS
L3006	A- 5
Q3001	B- 4
Q3002	B- 4
Q3003	B- 3
Q3004	B- 4
Q3005	B- 4
Q3006	B- 3
Q3007	B- 4
Q3008	B- 4
Q3009	B- 3
Q3010	B- 4
Q3011	B- 4
Q3012	C- 4
Q3013	B- 3
Q3015	A- 2
Q3016	A- 2
Q3017	A- 3
Q3019	B- 2
Q3021	A- 3
Q3022	B- 3
Q3023	B- 3
Q3024	B- 2
Q3027	C- 2
VR3001	B- 2


1
2
3
4
5
6
A
B
C
H.OSC
H.POS
V.OSC
RGB
PIC
AGC
DIRECT
THRU
R-NETWORK
MODE1
IN
OUT
RI
OP
TP1
TP2
MT4
FIL
RO
IC4001
IC4002
IC4014
IC4015
IC4017
部品面
PWB-VIDEO
930C22301-2-3-4-5-6-7-8-9

PCB-VIDEO (PARTS-SIDE)

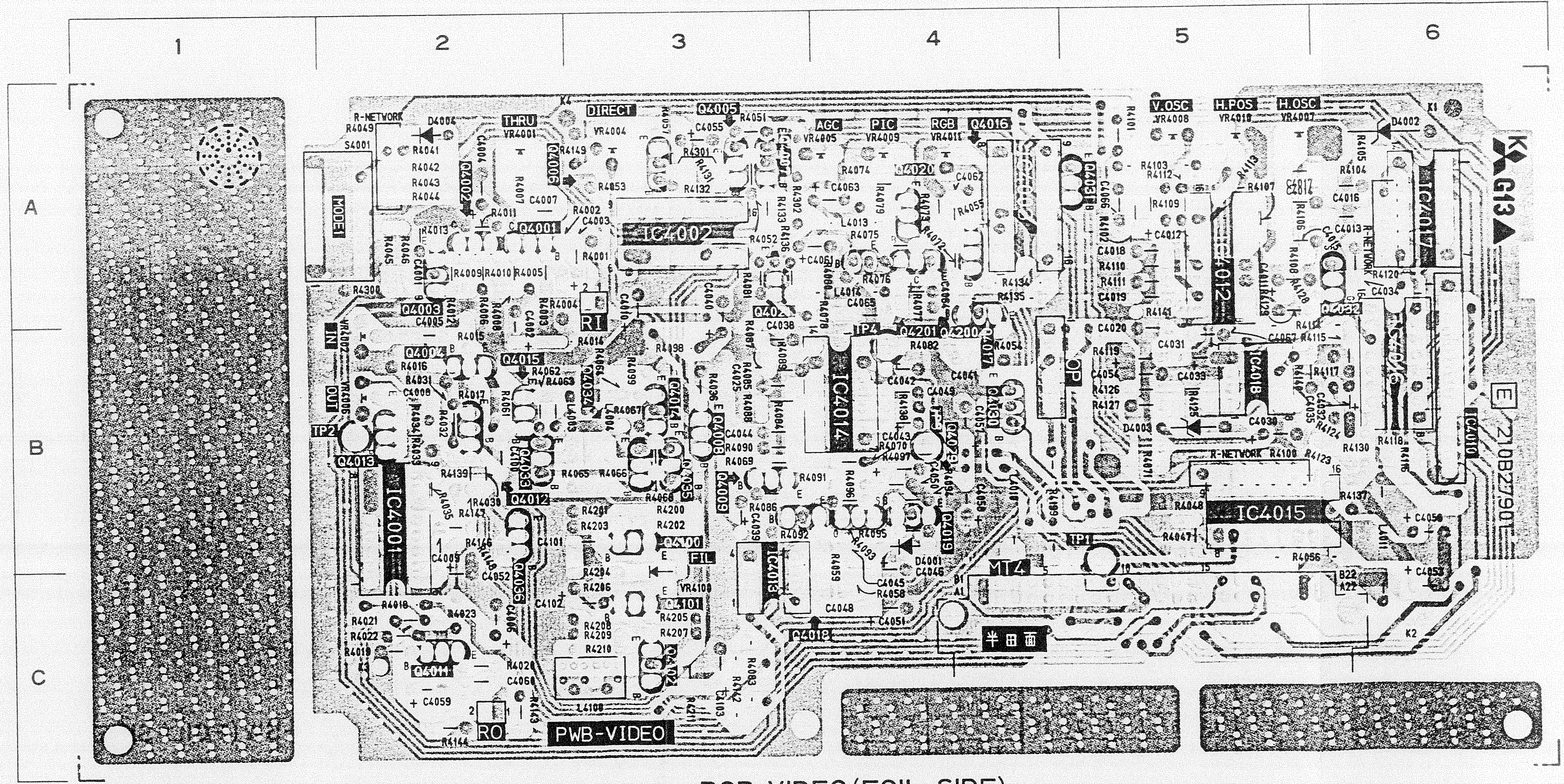
SYMBOL NO.	ADDRESS
D4001	B- 3
D4002	A- 1
D4003	B- 2
D4004	A- 5
IC4001	B- 5
IC4002	A- 4
IC4003	A- 3
IC4010	B- 1
IC4012	A- 2
IC4013	C- 4
IC4014	B- 3
IC4015	B- 2
IC4016	B- 1
IC4017	A- 1
IC4018	B- 2
L4003	B- 4
L4004	B- 4
L4010	B- 3
L4011	B- 1
L4013	A- 3
L4014	A- 3
L4100	C- 4

SYMBOL NO.	ADDRES
Q4001	A- 4
Q4002	A- 5
Q4003	A- 5
Q4004	B- 5
Q4005	A- 4
Q4006	A- 5
Q4007	A- 4
Q4008	B- 4
Q4009	B- 4
Q4011	C- 5
Q4012	B- 5
Q4013	B- 5
Q4014	B- 4
Q4015	B- 5
Q4016	A- 3
Q4017	B- 3
Q4018	C- 3
Q4019	B- 3
Q4020	A- 4
Q4021	A- 4
Q4029	B- 3
Q4030	B- 3
Q4031	A- 2
Q4032	A- 1
Q4033	B- 5



SYMBOL NO.	ADDRESS
D3022	B- 3
D3023	A- 3
D3024	A- 3
D3025	A- 3
IC3001	A- 3
IC3002	A- 3
IC3003	B- 4
IC3005	C- 3
IC3006	B- 5
IC3007	B- 5
IC3008	A- 5
IC3011	B- 6
IC3012	B- 5
IC3013	B- 5
IC3015	B- 6
IC3018	B- 6
IC3019	A- 4
IC3020	B- 6
IC3021	A- 6
L3001	A- 4
L3002	A- 4
L3003	C- 6
L3004	C- 4
L3005	A- 3

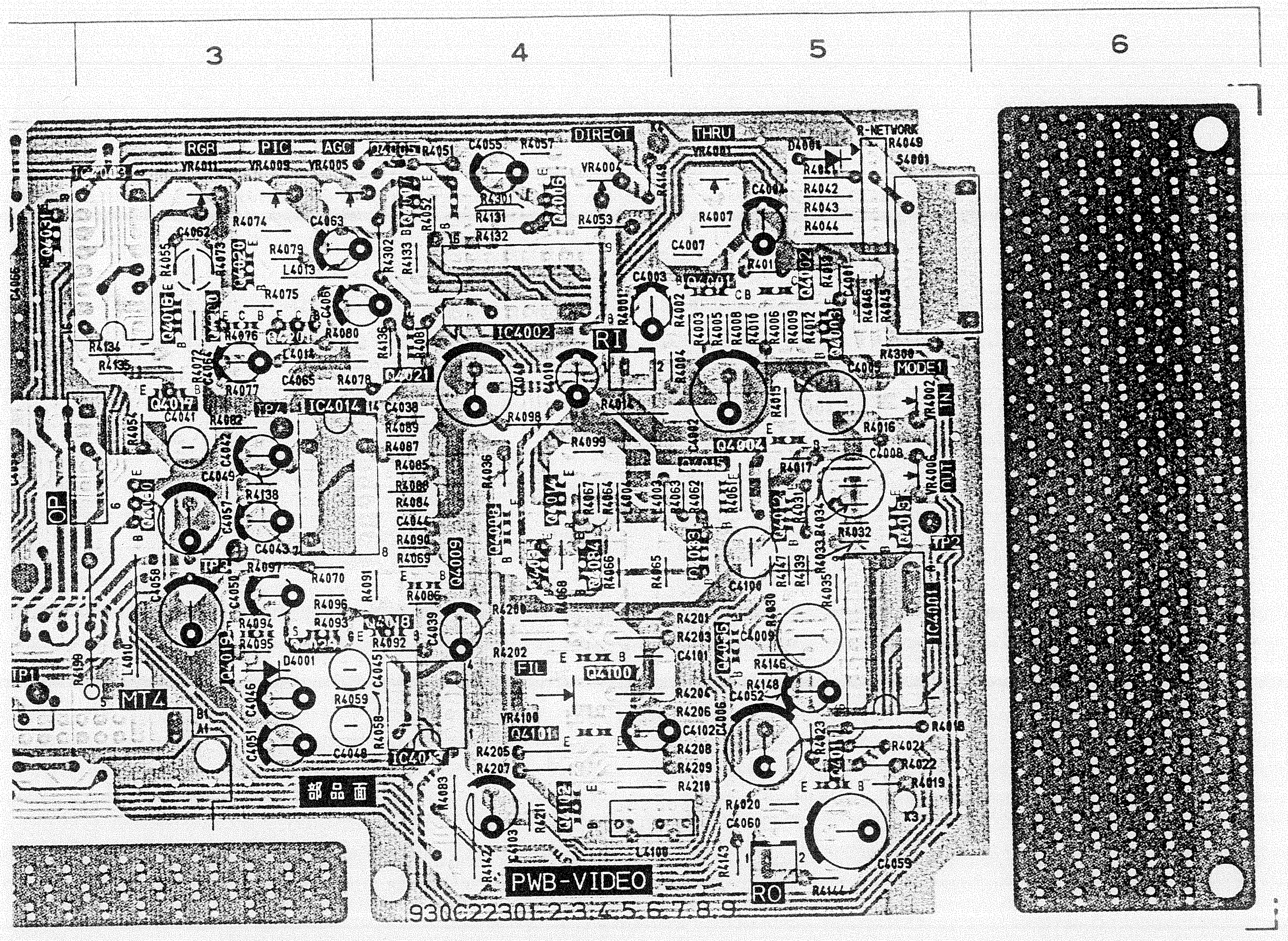
SYMBOL NO.	ADDRESS
L3006	A- 2
Q3001	B- 3
Q3002	B- 3
Q3003	B- 4
Q3004	B- 3
Q3005	B- 3
Q3006	B- 4
Q3007	B- 3
Q3008	B- 3
Q3009	B- 4
Q3010	B- 3
Q3011	B- 3
Q3012	C- 3
Q3013	C- 4
Q3015	A- 5
Q3016	A- 5
Q3017	A- 4
Q3019	B- 5
Q3021	A- 4
Q3022	B- 4
Q3023	B- 4
Q3024	C- 5
Q3027	C- 5
VR3001	B- 5


1
2
3
4
5
6
A
B
C
R-NETWORK
THRU
DIRECT
AGC
PIC
RGB
V.OSC
H.POS
H.OSC
MODE1
IN
OUT
RI
OP
TP1
TP2
TP4
MT4
FIL
RO
IC4001
IC4002
IC4014
IC4015
IC4017
G13
E
210B2790
半田面
PWB-VIDEO

PCB-VIDEO (FOIL-SIDE)

SYMBOL NO.	ADDRESS
D4001	C- 4
D4002	A- 6
D4003	B- 5
D4004	A- 2
IC4001	B- 2
IC4002	A- 3
IC4003	A- 4
IC4010	B- 6
IC4012	A- 5
IC4013	C- 3
IC4014	B- 4
IC4015	B- 5
IC4016	B- 6
IC4017	A- 6
IC4018	B- 5
L4003	B- 3
L4004	B- 3
L4010	B- 4
L4011	B- 6
L4013	A- 4
L4014	A- 4
L4100	C- 3

SYMBOL NO.	ADDRE
Q4001	A- 2
Q4002	A- 2
Q4003	A- 2
Q4004	B- 2
Q4005	A- 3
Q4006	A- 2
Q4007	A- 3
Q4008	B- 3
Q4009	B- 3
Q4011	C- 2
Q4012	B- 2
Q4013	B- 2
Q4014	B- 3
Q4015	B-
Q4016	A-
Q4017	B-
Q4018	C-
Q4019	B-
Q4020	A-
Q4021	B-
Q4029	B-
Q4030	B-
Q4031	A-
Q4032	B-
Q4033	B-

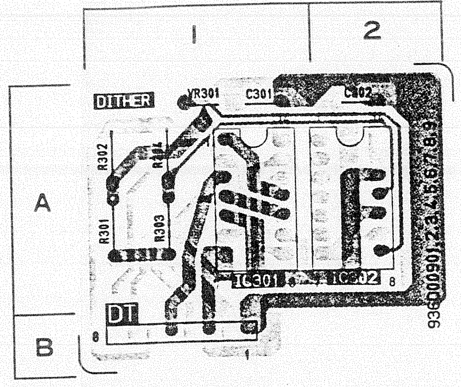

3
4
5
6
RGB
PIC
AGC
DIRECT
THRU
R-NETWORK
IC4002
IC4014
IC4017
MODE1
OP
TP1
TP2
TP3
MT4
FIL
RI
RO
部品面
PWB-VIDEO
930C22301 2.3.4.5.6.7.8.9

PCB-VIDEO (PARTS-SIDE)

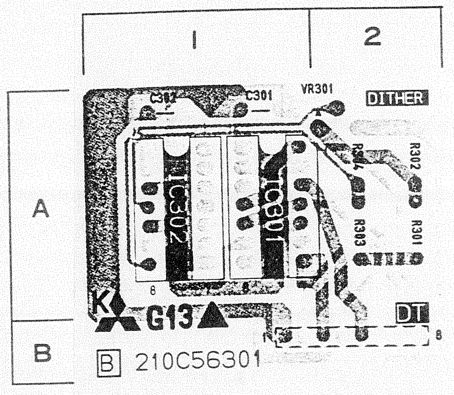
SYMBOL NO.	ADDRESS
D4001	B- 3
D4002	A- 1
D4003	B- 2
D4004	A- 5
IC4001	B- 5
IC4002	A- 4
IC4003	A- 3
IC4010	B- 1
IC4012	A- 2
IC4013	C- 4
IC4014	B- 3
IC4015	B- 2
IC4016	B- 1
IC4017	A- 1
IC4018	B- 2
L4003	B- 4
L4004	B- 4
L4010	B- 3
L4011	B- 1
L4013	A- 3
L4014	A- 3
L4100	C- 4

SYMBOL NO.	ADDRESS
Q4001	A- 4
Q4002	A- 5
Q4003	A- 5
Q4004	B- 5
Q4005	A- 4
Q4006	A- 5
Q4007	A- 4
Q4008	B- 4
Q4009	B- 4
Q4011	C- 5
Q4012	B- 5
Q4013	B- 5
Q4014	B- 4
Q4015	B- 5
Q4016	A- 3
Q4017	B- 3
Q4018	C- 3
Q4019	B- 3
Q4020	A- 4
Q4021	A- 4
Q4029	B- 3
Q4030	B- 3
Q4031	A- 2
Q4032	A- 1
Q4033	B- 5

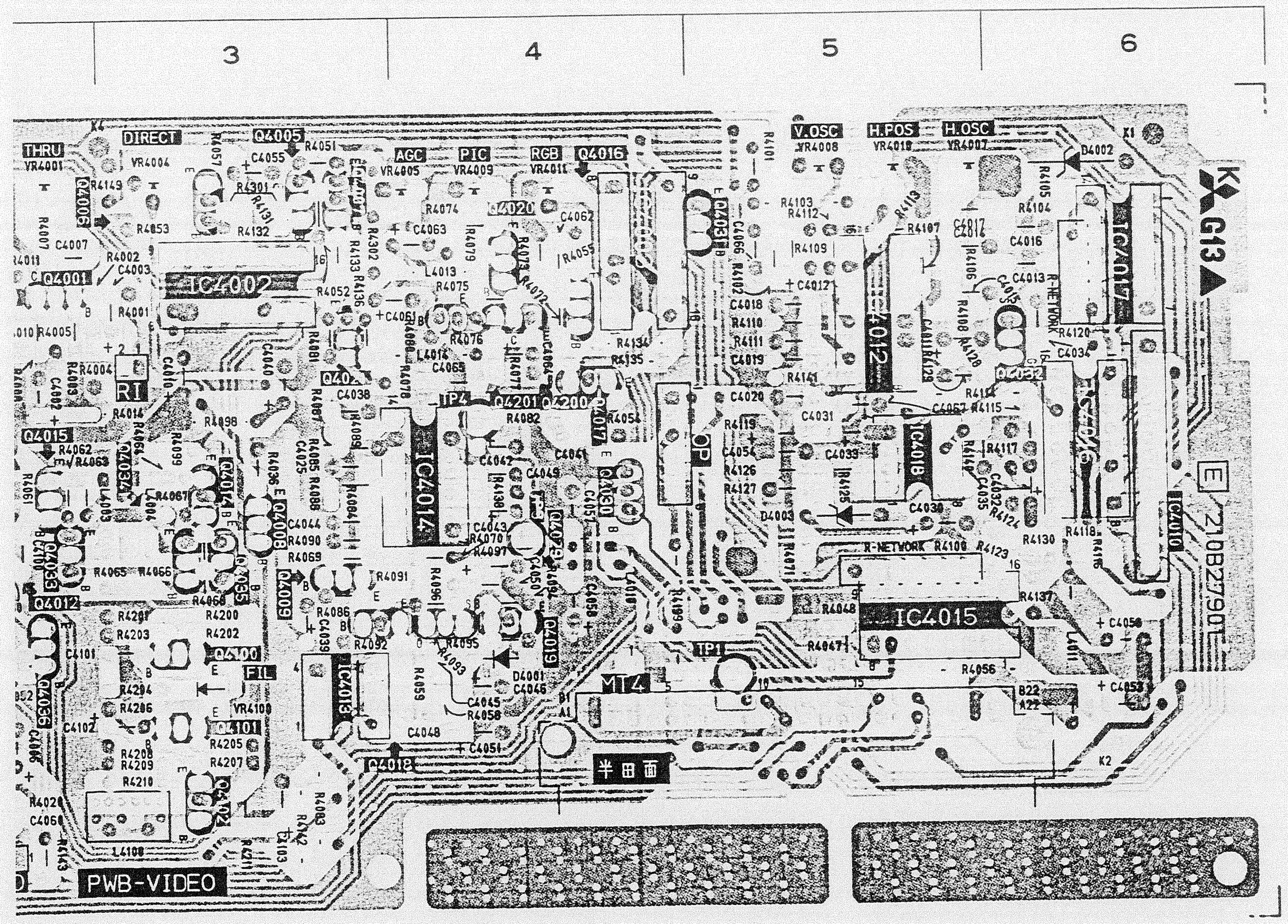
SYMBOL NO.	ADDRESS
Q4034	B- 4
Q4035	B- 4
Q4036	C- 5
Q4100	B- 4
Q4101	C- 4
Q4102	C- 4
Q4200	B- 3
Q4201	B- 3
TP1	B- 2
TP2	B- 5
TP3	B- 3
TP4	B- 3
VR4001	A- 5
VR4002	B- 5
VR4004	A- 4
VR4005	A- 3
VR4006	B- 5
VR4007	A- 1
VR4008	A- 2
VR4009	A- 3
VR4010	A- 2
VR4011	A- 3
VR4100	C- 4


1
2
A
B
DITHER
VR301
C301
C302
R302
R301
R303
IC301
IC302
DT
930C00960 1.2.3.4.5.6.7.8.9

PCB-DITHER (PARTS-SIDE)


1
2
A
B
DITHER
VR301
C301
C302
R302
R303
R301
IC301
IC302
G13
DT
B 210C56301

PCB-DITHER (FOIL-SIDE)

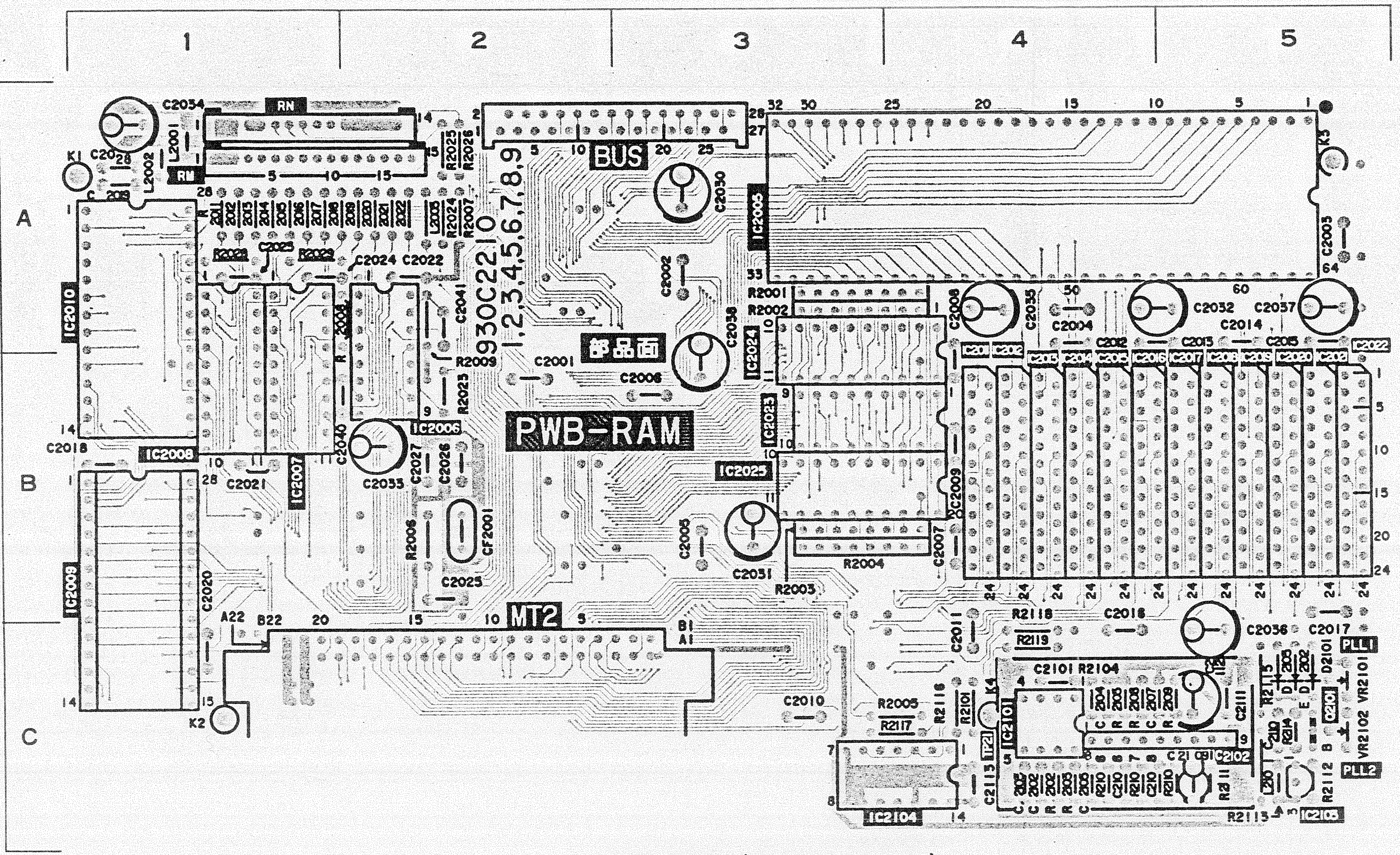

3
4
5
6
THRU
DIRECT
Q4005
AGC
PIC
RGB
Q4016
V.OSC
H.POS
H.OSC
IC4002
IC4012
IC4017
IC4014
IC4018
IC4015
R-NETWORK
RI
OP
TP1
TP4
FIL
MT4
G13
E 210B2790
半田面
PWB-VIDEO

PCB-VIDEO (FOIL-SIDE)

SYMBOL NO.	ADDRESS
D4001	C- 4
D4002	A- 6
D4003	B- 5
D4004	A- 2
IC4001	B- 2
IC4002	A- 3
IC4003	A- 4
IC4010	B- 6
IC4012	A- 5
IC4013	C- 3
IC4014	B- 4
IC4015	B- 5
IC4016	B- 6
IC4017	A- 6
IC4018	B- 5
L4003	B- 3
L4004	B- 3
L4010	B- 4
L4011	B- 6
L4013	A- 4
L4014	A- 4
L4100	C- 3

SYMBOL NO.	ADDRESS
Q4001	A- 2
Q4002	A- 2
Q4003	A- 2
Q4004	B- 2
Q4005	A- 3
Q4006	A- 2
Q4007	A- 3
Q4008	B- 3
Q4009	B- 3
Q4011	C- 2
Q4012	B- 2
Q4013	B- 2
Q4014	B- 3
Q4015	B- 2
Q4016	A- 4
Q4017	B- 4
Q4018	C- 4
Q4019	B- 4
Q4020	A- 3
Q4021	B- 3
Q4029	B- 4
Q4030	B- 4
Q4031	A- 5
Q4032	B- 6
Q4033	B- 2

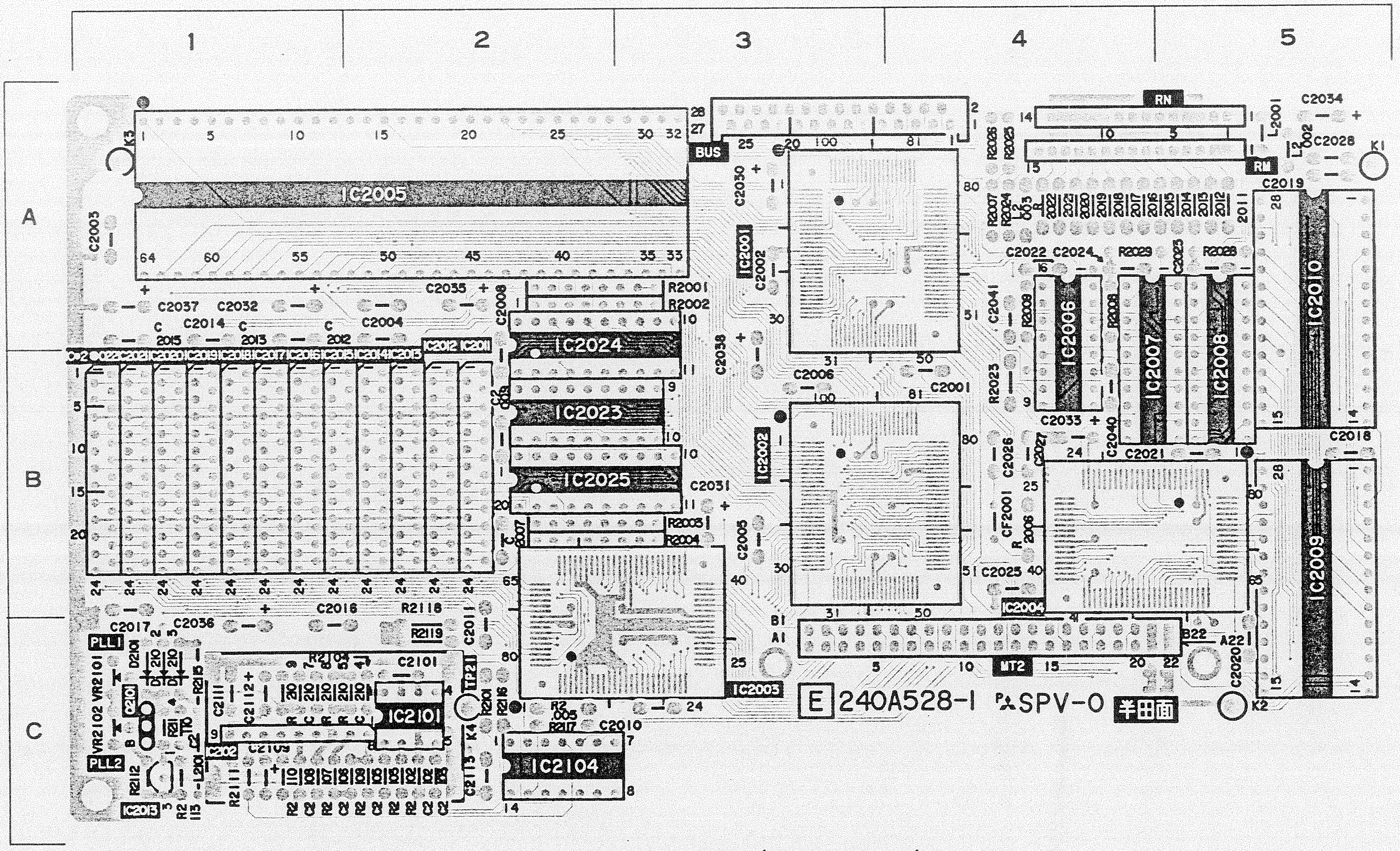
SYMBOL NO.	ADDRESS
Q4034	B- 3
Q4035	B- 3
Q4036	C- 2
Q4100	B- 3
Q4101	C- 3
Q4102	C- 3
Q4200	B- 4
Q4201	B- 4
TP1	B- 5
TP2	B- 2
TP3	B- 4
TP4	B- 4
VR4001	A- 2
VR4002	B- 2
VR4004	A- 3
VR4005	A- 4
VR4006	B- 2
VR4007	A- 6
VR4008	A- 5
VR4009	A- 4
VR4010	A- 5
VR4011	A- 4
VR4100	C- 3


1
2
3
4
5
A
B
C
BUS
PWB-RAM
部品面
930C2210
1,2,3,4,5,6,7,8,9
MT2
RN
RM
PLL1
PLL2
IC2005
IC2006
IC2007
IC2008
IC2009
IC2010
IC2023
IC2024
IC2025
IC2101
IC2104
IC2103
CF2001
K1
K2
K3
K4

PCB-RAM(PARTS-SIDE)

SYMBOL NO.	ADDRESS
CF2001	B-2
D2101	C-5
D2102	C-5
D2103	C-5
IC2005	A-4
IC2006	B-2
IC2007	B-1
IC2008	B-1
IC2009	B-1
IC2010	A-1
IC2011	B-4
IC2012	B-4
IC2013	B-4
IC2014	B-4
IC2015	B-4
IC2016	B-5
IC2017	B-5
IC2018	B-5
IC2019	B-5
IC2020	B-5
IC2021	B-5
IC2022	B-5

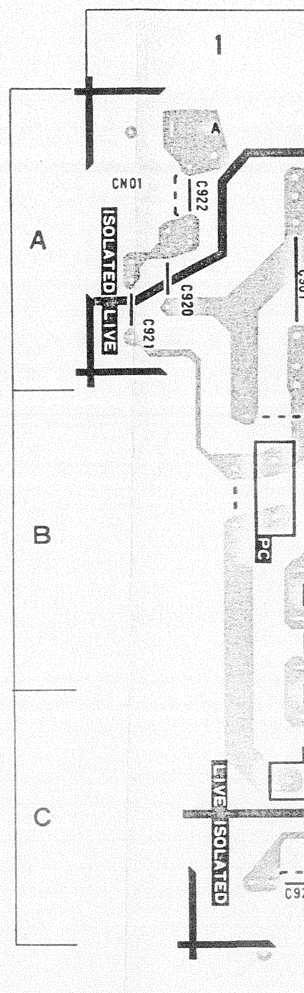
SYMBOL NO.	ADDRESS
IC2023	B-3
IC2024	A-3
IC2025	B-3
IC2101	C-4
IC2102	C-5
IC2103	C-5
IC2104	C-4
L2001	A-1
L2002	A-1
L2003	A-1
L2101	C-5
Q2101	C-5
TP21	C-4
VR2101	C-5
VR2102	C-5


1
2
3
4
5
A
B
C
BUS
MT2
RN
RM
PLL1
PLL2
IC2001
IC2002
IC2003
IC2004
IC2005
IC2006
IC2007
IC2008
IC2009
IC2010
IC2023
IC2024
IC2025
IC2101
IC2104
E 240A528-1
SPV-0
半田面
K1
K2
K3
K4

PCB-RAM(FOIL-SIDE)

SYMBOL NO.	ADDRESS
CF2001	B-4
D2101	C-1
D2102	C-1
D2103	C-1
IC2001	A-3
IC2002	B-1
IC2003	C-3
IC2004	B-4
IC2005	A-2
IC2006	B-4
IC2007	B-4
IC2008	B-5
IC2009	B-5
IC2010	A-5
IC2011	B-2
IC2012	B-2
IC2013	B-2
IC2014	B-2
IC2015	B-2
IC2016	B-1
IC2017	B-1
IC2018	B-1

SYMBOL NO.	ADDRESS
IC2019	B-1
IC2020	B-1
IC2021	B-1
IC2022	B-1
IC2023	B-2
IC2024	A-2
IC2025	B-2
IC2101	C-2
IC2102	C-1
IC2103	C-1
IC2104	C-2
L2001	A-5
L2002	A-5
L2003	A-4
L2101	C-5
Q2101	C-1
TP21	C-2
VR2101	C-1
VR2102	C-1

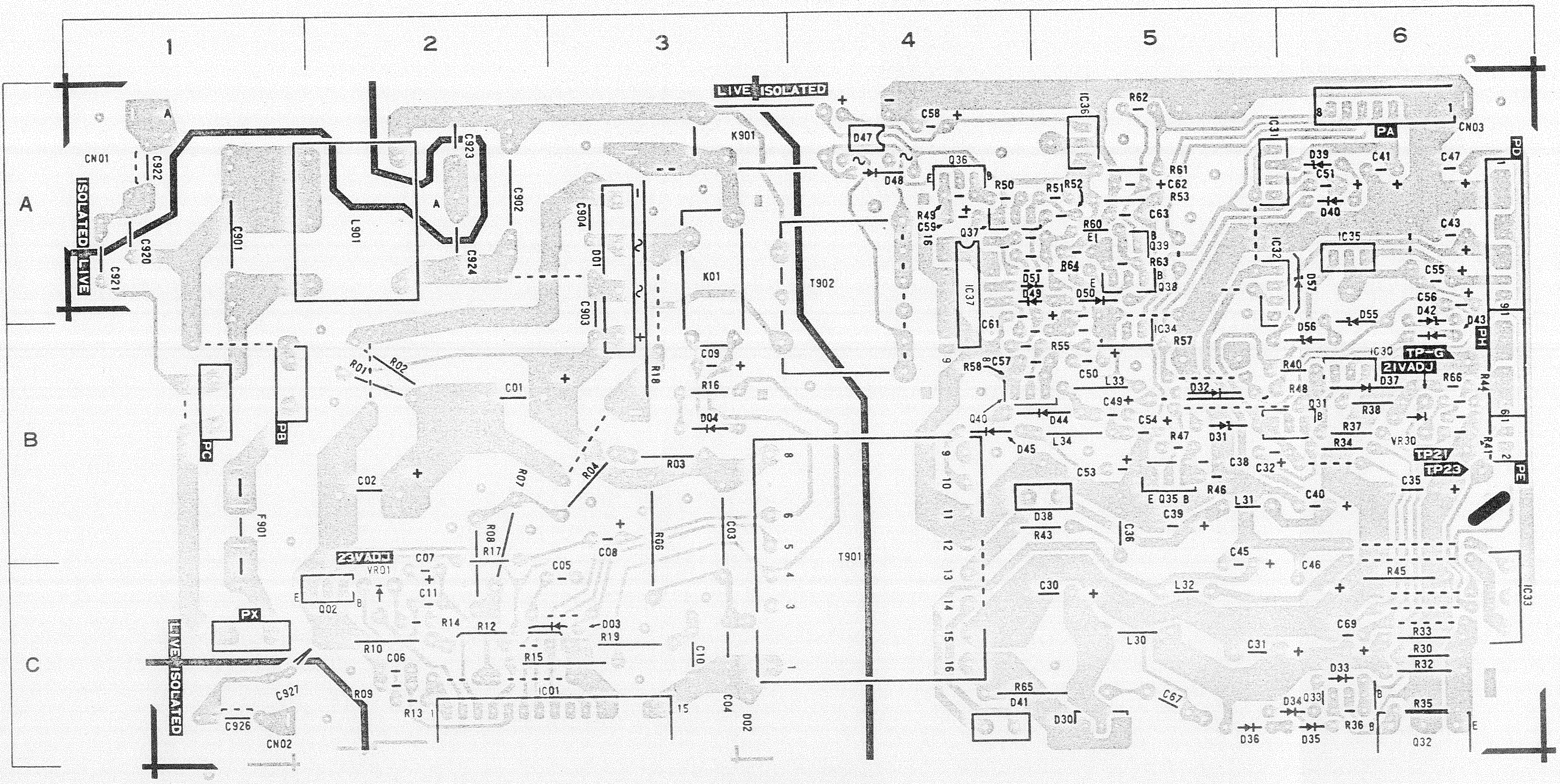

1
A
B
C
CN01
C922
C920
C921
ISOLATED
LIVE
PC
LIVE
ISOLATED

ADDRESS
B-2
C-5
C-5
C-5
A-4
B-2
B-1
B-1
B-1
A-1
B-4
B-4
B-4
B-4
B-4
B-5
B-5
B-5
B-5
B-5
B-5
B-5

SYMBOL NO.	ADDRESS
IC2023	B-3
IC2024	A-3
IC2025	B-3
IC2101	C-4
IC2102	C-5
IC2103	C-5
IC2104	C-4
L2001	A-1
L2002	A-1
L2003	A-1
L2101	C-5
Q2101	C-5
TP21	C-4
VR2101	C-5
VR2102	C-5

ADDRESS
B-4
C-1
C-1
C-1
A-3
B-1
C-3
B-4
A-2
B-4
B-4
B-5
B-5
A-5
B-2
B-2
B-2
B-2
B-2
B-1
B-1
B-1

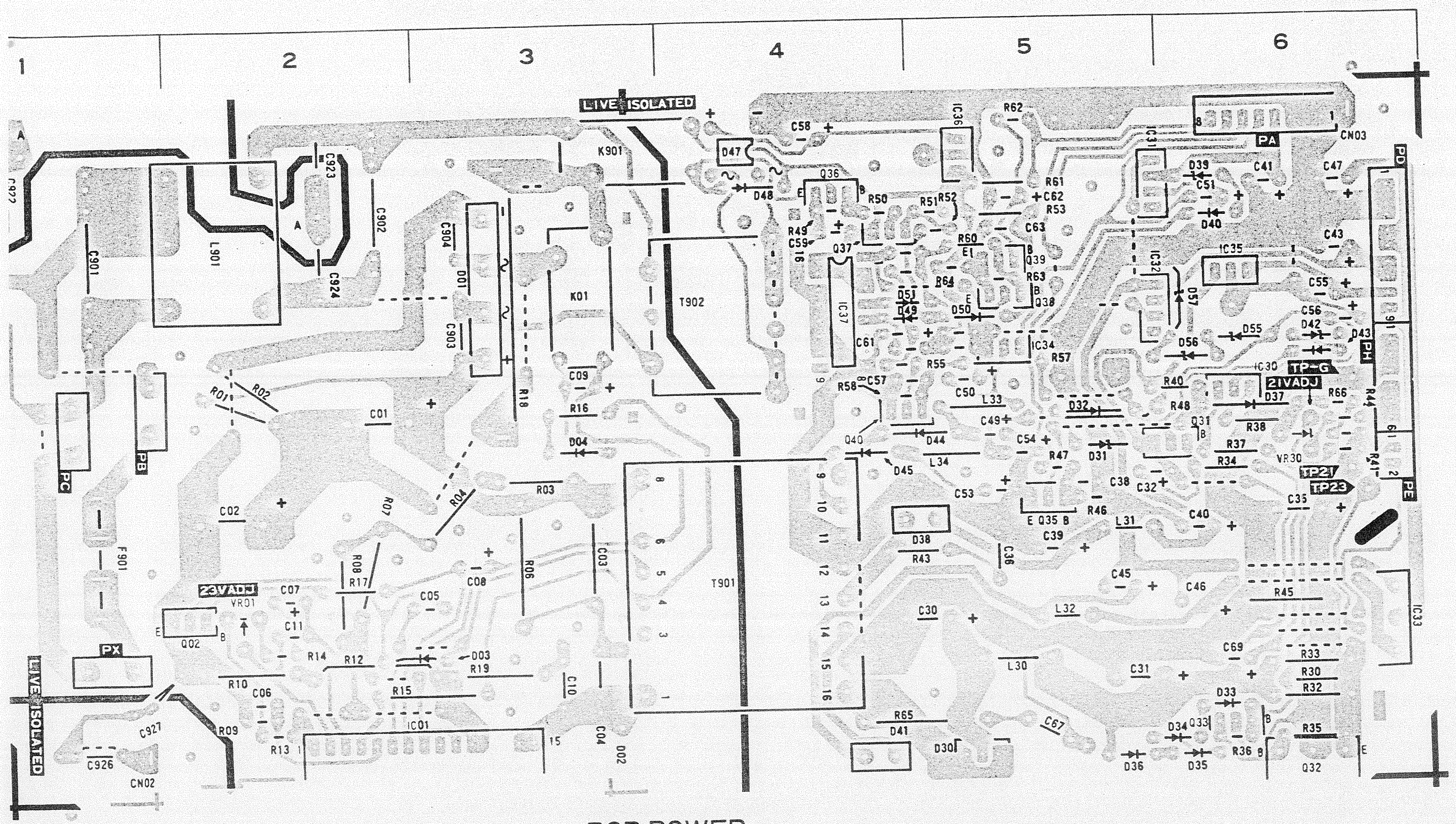
SYMBOL NO.	ADDRESS
IC2019	B-1
IC2020	B-1
IC2021	B-1
IC2022	B-1
IC2023	B-2
IC2024	A-2
IC2025	B-2
IC2101	C-2
IC2102	C-1
IC2103	C-1
IC2104	C-2
L2001	A-5
L2002	A-5
L2003	A-4
L2101	C-5
Q2101	C-1
TP21	C-2
VR2101	C-1
VR2102	C-1


1
2
3
4
5
6
A
B
C
LIVE
ISOLATED
LIVE ISOLATED
CN01
C922
C920
C921
C901
L901
C923
C924
C902
C904
D01
C903
K901
K01
T902
C58
D47
D48
Q36
IC36
R62
R61
C62
R53
R50
R51
R52
C63
R60
Q39
R64
Q38
R63
R49
C59
Q37
IC37
D51
D49
D50
IC31
D39
C51
D40
C41
C47
CN03
PA
PD
IC32
IC35
C43
C55
D57
C56
D42
D43
D55
D56
PH
C61
R55
R58
C57
C50
L33
C49
IC34
R57
IC30
TP-G
21VADJ
D37
R66
R40
R44
Q32
R48
D31
R38
R37
R34
VR30
TP21
TP23
R41
C35
PE
Q40
D44
L34
D45
C54
R47
D31
C38
C32
C53
R46
E Q35 B
C39
L31
C40
D38
R43
C36
PC
PB
R01
R02
C01
C02
R07
R04
R03
R18
C09
R16
D04
F901
23VADJ
VR01
C07
R08
R17
C11
C05
C08
R06
C03
T901
Q02
PX
R14
R12
D03
R19
R15
R10
C06
C10
R09
R13
IC01
C04
D02
C927
C926
CN02
C45
C46
R45
IC33
C30
L32
C69
R33
R30
R32
L30
C31
R65
D41
D30
C67
D33
D34
Q33
R35
R36
D36
D35
Q32
E

PCB-POWER

SYMBOL NO.	ADDRESS
D01	A-3
D02	C-3
D03	C-2
D04	B-3
D30	C-5
D31	B-5
D32	B-5
D33	C-6
D34	C-6
D35	C-6
D36	C-5
D37	B-6
D38	B-5
D39	A-6
D40	A-6
D41	C-4
D42	B-6
D43	B-6
D44	B-5
D45	B-4
D47	A-4
D48	A-4
D49	A-5
D50	A-4
D51	A-5
D55	B-6
D56	B-6
D57	B-6

SYMBOL NO.	ADD
F901	B-
IC01	C-
IC30	B-
IC31	A-
IC32	A-
IC33	C-
IC34	B-
IC35	A-
IC36	A-
IC37	A-
L30	C-
L31	B-
L32	C-
L33	B-
L34	B-
L901	A-
Q02	C
Q31	B
Q32	C
Q33	C
Q35	B
Q36	A
Q37	A
Q38	A

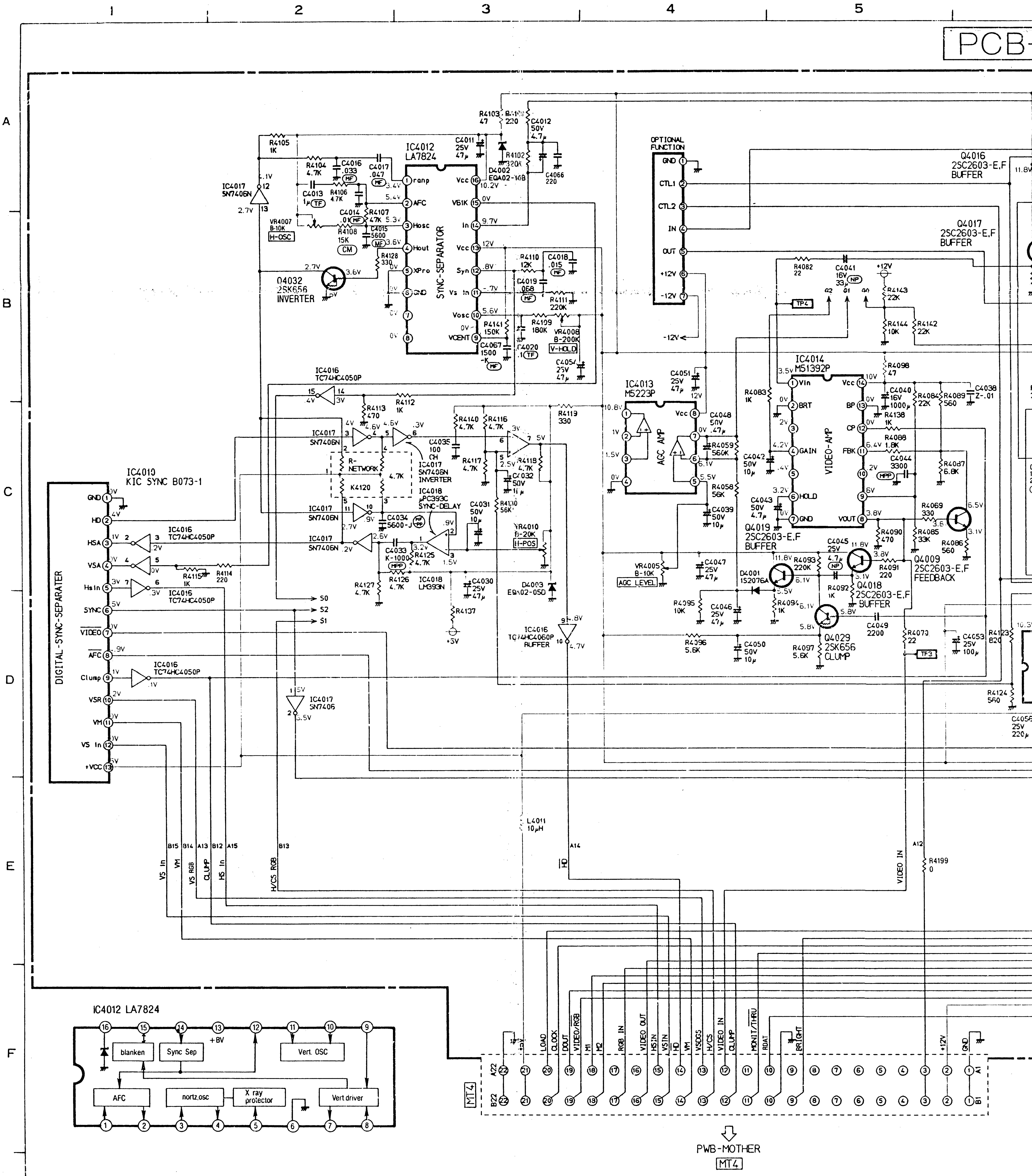

1
2
3
4
5
6
LIVE ISOLATED
23VADJ
21VADJ
TP-G
TP21
TP23
PA
PB
PC
PD
PE
PH
PX
CN02
CN03
K901
T901
T902
L901
F901
IC01
IC30
IC32
IC33
IC34
IC35
IC36
IC37
VR01
VR30

PCB-POWER

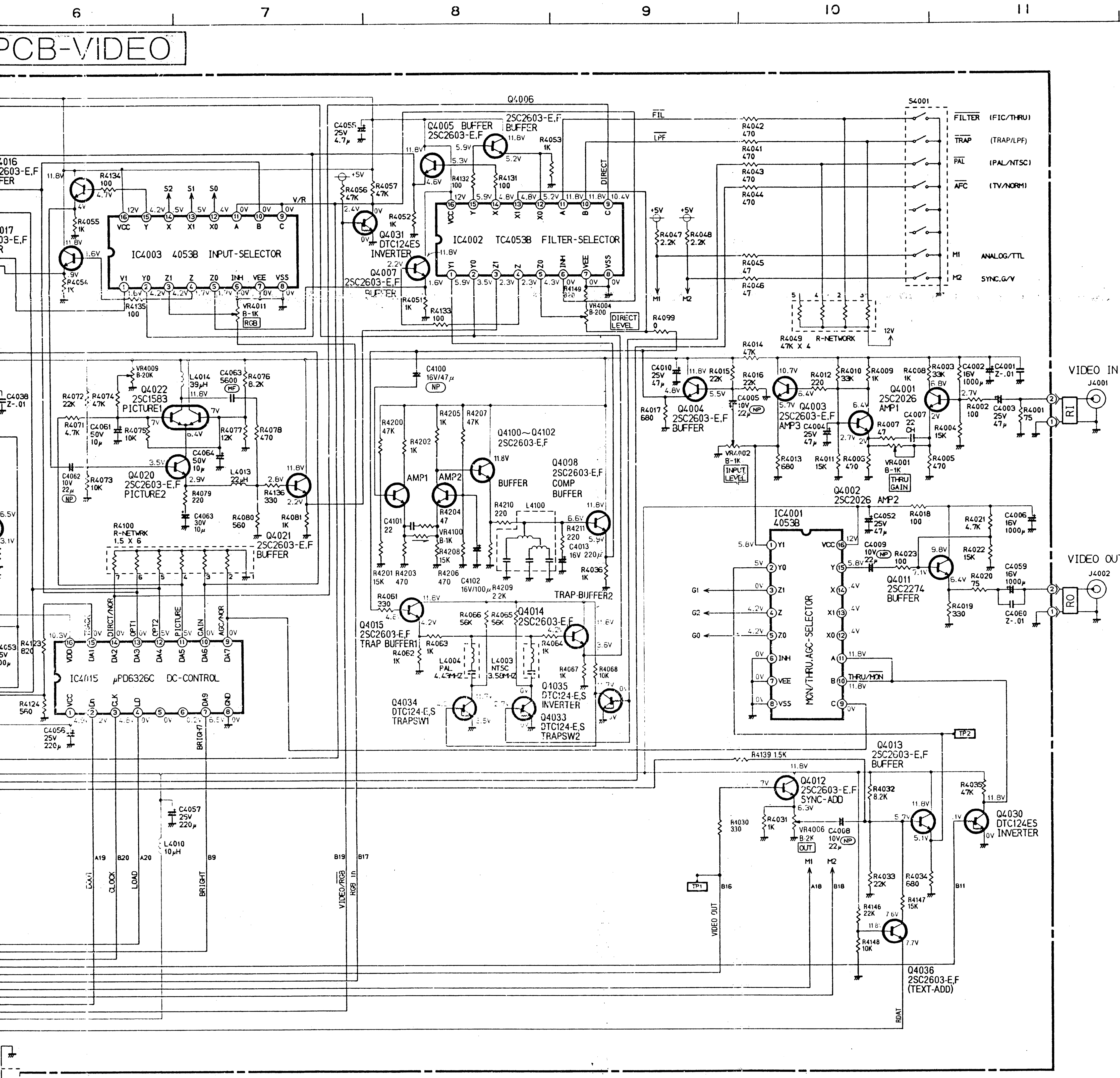
SYMBOL NO.	ADDRESS
D01	A-3
D02	C-3
D03	C-2
D04	B-3
D30	C-5
D31	B-5
D32	B-5
D33	C-6
D34	C-6
D35	C-6
D36	C-5
D37	B-6
D38	B-5
D39	A-6
D40	A-6
D41	C-4
D42	B-6
D43	B-6
D44	B-5
D45	B-4
D47	A-4
D48	A-4
D49	A-5
D50	A-4
D51	A-5
D55	B-6
D56	B-6
D57	B-6

SYMBOL NO.	ADDRESS
F901	B-1
IC01	C-2
IC30	B-6
IC31	A-5
IC32	A-5
IC33	C-6
IC34	B-5
IC35	A-6
IC36	A-5
IC37	A-4
L30	C-5
L31	B-5
L32	C-5
L33	B-5
L34	B-5
L901	A-2
Q02	C-2
Q31	B-6
Q32	C-6
Q33	C-6
Q35	B-5
Q36	A-4
Q37	A-4
Q38	A-5

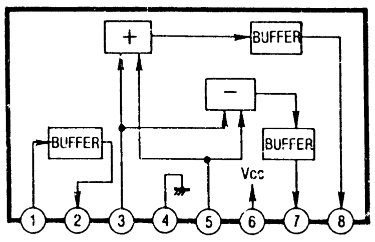
SYMBOL NO.	ADDRESS
Q39	A-5
Q40	B-4
T901	B-4
T902	A-4
VR01	C-2
VR30	B-6
TP21	B-6
TP23	B-6
TP-G	B-6


1
2
3
4
5
A
B
C
D
E
F
G
PCB-
IC4012
LA7824
SYNC-SEPARATOR
ramp
AFC
Hosc
Hout
XPro
GND
Vcc
VBLK
In
Syn
Vs In
Vosc
VCENT
IC4017
SN7406N
Q4032
2SK656
INVERTER
VR4007
B-10K
H-OSC
R4105
1K
R4104
4.7K
C4016
.033
C4013
1μ
R4106
4.7K
C4017
.047
C4014
.01
R4107
47K
R4108
15K
C4015
5600
CM
R4128
330
R4103
47
R4101
220
C4011
25V
47μ
D4002
EQA02-10B
R4102
320R
C4012
50V
4.7μ
C4066
220
R4110
12K
C4018
.015
C4019
.068
R4111
220K
R4109
180K
VR4008
B-200K
V-HOLD
R4141
150K
C4067
1500
C4020
.1
C4051
25V
47μ
OPTIONAL FUNCTION
GND
CTL1
CTL2
IN
OUT
+12V
-12V
IC4013
M5223P
AGC AMP
Q4016
2SC2603-E,F
BUFFER
Q4017
2SC2603-E,F
BUFFER
R4082
22
C4041
16V
33μ
R4143
22K
R4144
10K
R4142
22K
TP4
R4098
47
IC4014
M51392P
VIDEO-AMP
Vin
BRT
GAIN
HOLD
GND
Vcc
BP
CP
FBK
VOUT
R4083
1K
C4040
16V
1000μ
R4084
22K
R4089
560
C4038
Z-.01
R4138
1K
R4088
1.8K
C4044
3300
R4087
6.8K
R4069
330
R4085
33K
R4086
560
R4090
470
R4091
220
Q4009
2SC2603-E,F
FEEDBACK
Q4018
2SC2603-E,F
BUFFER
Q4019
2SC2603-E,F
BUFFER
R4093
220K
C4045
25V
4.7μ
R4092
1K
C4049
2200
R4073
22
TF3
C4053
25V
100μ
R4123
820
R4124
560
C4056
25V
220μ
C4048
50V
.47μ
R4059
560K
R4058
56K
C4039
50V
10μ
C4042
50V
10μ
C4043
50V
4.7μ
VR4005
B-10K
AGC LEVEL
C4047
25V
47μ
D4001
1S2076A
R4094
1K
R4095
10K
C4046
25V
47μ
Q4029
2SK656
CLUMP
R4096
5.6K
C4050
50V
10μ
R4097
5.6K
IC4016
TC74HC4050P
R4113
470
R4112
1K
R4119
330
R-NETWORK
4.7K
K4120
C4035
100
CH
IC4017
SN7406N
INVERTER
IC4018
μPC393C
SYNC-DELAY
R4140
4.7K
R4116
4.7K
R4117
4.7K
R4118
4.7K
C4032
50V
1μ
R4130
56K
C4031
50V
10μ
VR4010
B-20K
H-POS
C4034
5600-J
C4033
K-1000
R4125
4.7K
R4127
4.7K
R4126
4.7K
IC4018
LM393N
C4030
25V
47μ
R4137
+3V
D4003
EQA02-05D
IC4016
TC74HC4060P
BUFFER
IC4017
SN7406
L4011
10μH
IC4010
KIC SYNC B073-1
DIGITAL-SYNC-SEPARATER
GND
HD
HSA
VSA
Hs In
SYNC
VIDEO
AFC
Clump
VSR
VM
VS In
+VCC
R4115
1K
R4114
220
S0
S2
S1
B15
B14
A13
B12
A15
B13
A14
A12
VS In
VM
VS RGB
CLUMP
HS In
H/CS RGB
HD
VIDEO IN
R4199
0
+12V
LOAD
CLOCK
DOUT
VIDEO/RGB
M1
M2
RGB IN
VIDEO OUT
HSIN
VSIN
HD
VM
VSOGS
H/CS
VIDEO IN
CLUMP
MONIT/THRU
RDAT
BRIGHT
+12V
GND
A22
B22
A1
B1
MT4
PWB-MOTHER
MT4
IC4012 LA7824
blanken
Sync Sep
+8V
Vert. OSC
AFC
nortz.osc
X ray protector
Vert driver

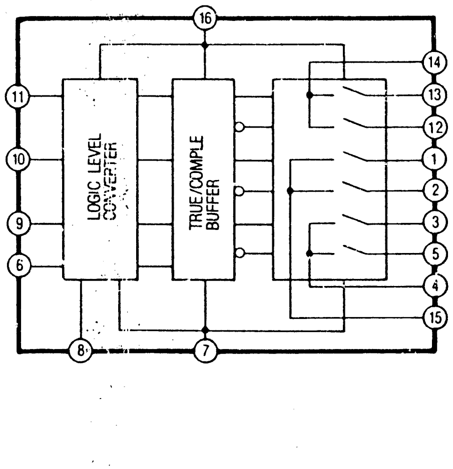
PCB-VIDEO

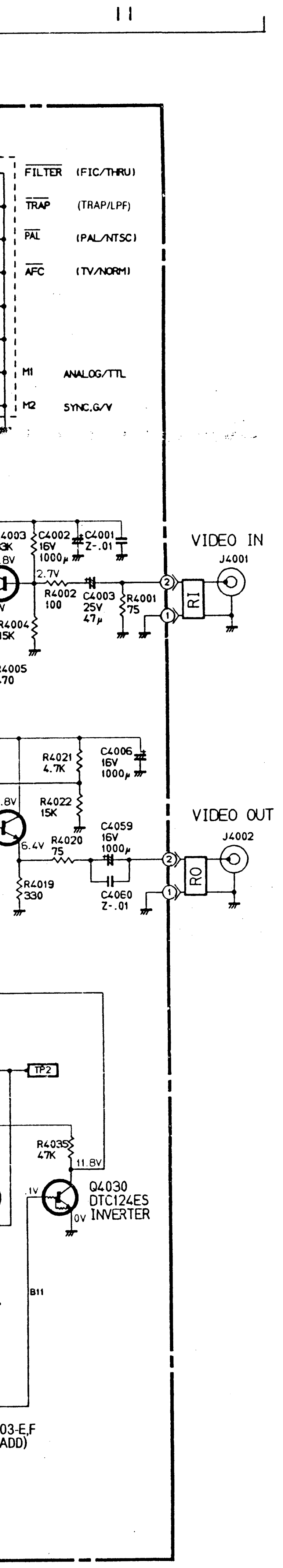

6
7
8
9
10
11
Q4006
Q4005 BUFFER 2SC2603-E,F
2SC2603-E,F BUFFER
IC4003 4053B INPUT-SELECTOR
IC4002 TC4053B FILTER-SELECTOR
Q4031 DTC124ES INVERTER
Q4007 2SC2603-E,F BUFFER
VR4011 B-1K RGB
VR4004 B-200 DIRECT LEVEL
DIRECT
S4001
FILTER (FIC/THRU)
TRAP (TRAP/LPF)
PAL (PAL/NTSC)
AFC (TV/NORM)
M1 ANALOG/TTL
M2 SYNC,G/V
FIL
LPF
R4049 47K X 4 R-NETWORK
VIDEO IN
J4001
RI
VIDEO OUT
J4002
RO
Q4004 2SC2603-E,F BUFFER
Q4003 2SC2603-E,F AMP3
Q4001 2SC2026 AMP1
Q4002 2SC2026 AMP2
VR4002 B-1K INPUT LEVEL
VR4001 B-1K THRU GAIN
IC4001 4053B
MON/THRU,AGC-SELECTOR
THRU/MON
Q4011 2SC2274 BUFFER
G1
G2
G0
TP2
Q4013 2SC2603-E,F BUFFER
Q4012 2SC2603-E,F SYNC-ADD
VR4006 B-2K OUT
Q4030 DTC124ES INVERTER
Q4036 2SC2603-E,F (TEXT-ADD)
TP1
VIDEO OUT
RDAT
Q4022 2SC1583 PICTURE1
Q4020 2SC2603-E,F PICTURE2
Q4021 2SC2603-E,F BUFFER
R4100 R-NETWRK 1.5 X 6
Q4100~Q4102 2SC2603-E,F
AMP1
AMP2
BUFFER
Q4008 2SC2603-E,F COMP BUFFER
TRAP-BUFFER2
Q4015 2SC2603-E,F TRAP BUFFER1
Q4014 2SC2603-E,F
L4004 PAL 4.43MHZ
L4003 NTSC 3.58MHZ
Q4035 DTC124-E,S INVERTER
Q4033 DTC124-E,S TRAPSW2
Q4034 DTC124-E,S TRAPSW1
IC4015 μPD6326C DC-CONTROL
DIRCT/NOR
PICTURE
GAIN
AGC/NOR
BRIGHT
CLOCK
LOAD
VIDEO/RGB
RGB In
A19
B20
A20
B9
B19
B17
B16
A18
B18
B11
A1
B1

IC4011 M51386L


+
BUFFER
−
BUFFER
BUFFER
Vcc
1
2
3
4
5
6
7
8

IC4001, IC4002, IC4003 TC4053BP


16
LOGIC LEVEL CONVERTER
TRUE/COMPLE BUFFER
11
10
9
6
8
7
14
13
12
1
2
3
5
4
15



SCHEMATIC DIAGRAM

MODEL : P68E

NOTE 1:

1. The unit of resistance is "ohm" with no symbol.
   Accordingly, K = 1000 ohms
   M = 1000K ohms.
2. The wattage of resistors, if not specifically designated, **is less than 1/4 watt.**
3. **Resistors, if not specifically designated, are carbon resistors.**
4. **The marks of resistors are as follows:**
   CE : Cemented resistor
   MB : Metal oxide film resistor (type B)
   MPC : Metal plate cement resistor.
   ML : Metal linear resistor.
   Ⓢ : Fixed composition resistor
   Ⓦ : Wire wound resistor
   Ⓜ : Metal film resistor
5. The tolerance of resistor value, if not specifically designated, is: ±5%, K = ±10% M = ±20%
6. The unit of capacitance, if not specifically designated, is:
   a) μF, for numbers less than 1
   b) PF, for numbers more than 1
7. Capacitors, if not specifically designated are Ceramic capacitors except electrolytic capacitors.
8. The marks of capacitors are as follows:
   ALM : Aluminus electrolytic capacitor
   MF : Polyester capacitor
   PP : Polypropylene film capacitor
   TANT : Tantalum capacitor
   TF : Twin film capacitor.
   MF.PP : Polyester polypropylene film capacitor.
   MPP : Metallize plastic film capacitor.
   NP : Non polarized electrolytic capacitor.
   ⧧ : Electrolytic capacitor
9. The DC working voltage of capacitor, if not specifically designated is: 50V
10. The tolerance of capacitor value, if not specifically designated is: ±10% for polyester capacitor
    ±5% for ceramic capacitor
    and J =±5% K =±10% M =±20% $P = {}^{+100\%}_{-\ \ 0\%}$
    C =±0.25PF D = ±0.5PF F =±1PF $Z = {}^{+80\%}_{-20\%}$ N = ±30%

SPECIFIC SYMBOL	
Zener Diode	Varistor
Varicap	Crystal unit
Posistor	Air Gap
Thermistor	Part (resistor) attached on the copper foil side of PCB
Fusible Resistor	Ceramic filter

NOTE 2:

1. DC voltages were measured from points indicated to the circuit ground with a high-Z voltmeter.
2. This is a basic schematic diagram. Some sets may be subject to modification according to engineering improvement.

⚠

SERVICING PRECAUTION

SYMBOLS INDICATE COMPONENTS HAVING SPECIAL CHARACTERISTICS IMPORTANT TO SAFETY AND PERFORMANCE. THEREFOR REPLACEMENT OF ANY SAFETY PARTS SHOULD BE IDENTICAL IN VALUE AND CHARACTERISTICS.

DON'T DEGRADE THE SAFETY OF THE RECEIVERS THROUGH IMPROPER SERVICING.

Hinweis 1 :

1. Bezeichnung der Widerstände
   Keine Bezeichnung = Ohm
   K = 1000 Ohm
   M = 1000 K Ohm
2. Widerstände ohne Leistungsangabe unter 1/4 Watt.
3. Widerstände ohne Bezeichnung sind Kohlewiderstände
4. Die Symbole für die Widerstände sind wie folgt:
   CE : Zementwiderstände
   MB : Metalloxyd-Widerstände (Type B)
   MPC : Metallüberzogene Zementwiderstände
   Ⓢ : Fester Ausgleichswiderstand
   Ⓦ : Drahtwiderstand
   Ⓜ : Metalfilm-Widerstand
5. Die Toleranzbezeichnung ist
   ohne Bezeichnung ±5%, K= ±10%, M= ±20%
6. Die nicht besonders bezeichneten Kundensatoren
   a) μF für Zahlen unter 1
   b) pF für Zahlen über 1
7. Kondensatoren ohne Bezeichnung sind Keramik-Kondensatoren, ausgenommen Elektrolyt-Kondensatoren.
8. Für die Kondensatoren werden folgende Symbole verwendet:
   ALM : Aluminium-Elektrolyt-Kondensatoren
   MF : Polyester-Kondensatoren
   PP : Polypropylene-Schichtkondensator
   TANT : Tantal-Kondensator
   TF : Doppelschichtkondensator
   MF-PP : Polyester-Ploypropylene-Kondensator
   MPP : Metallisierter-Plastikfilm-Kondensator
   NP : Ungepolter-Elektrolyt-Kondensator
   ⧧ : Elektrolyt-Kondensator
9. Die Gleichstrom Spannungsfestigkeit der nicht besonders bezeichneten Kondensatoren beträgt:
   50V
10. Die Toleranz der nicht besonders bezeichneten Kondensatoren beträgt: ±10% für Polyester-Kondensatoren
    ± 5% fur Keramik-Kondensatoren
    Sonstige Toleranzen
    J = ±5% K = ±10% M = ±20% N = ±30%
    P = +100%, −0% Z = +80%, −20%
    C = ±0.25pF D = ±0.5pF F = ±1pF
11. Keramik-Kondensatoren mit den Bezeicnnungen RH, UJ, SL usw. sind Temperatur-Kompensations-Kondensatoren.

Schaltungssymbole	
Zener Diode	Varistor
Varicap	Keramikeinheit
Posistor	Luftspalt
Thermistor	Bauteile (Widerstand) auf der Printseite der Platine
Sicherungswiderstand	Keramikfilter

Hinweis 2 :

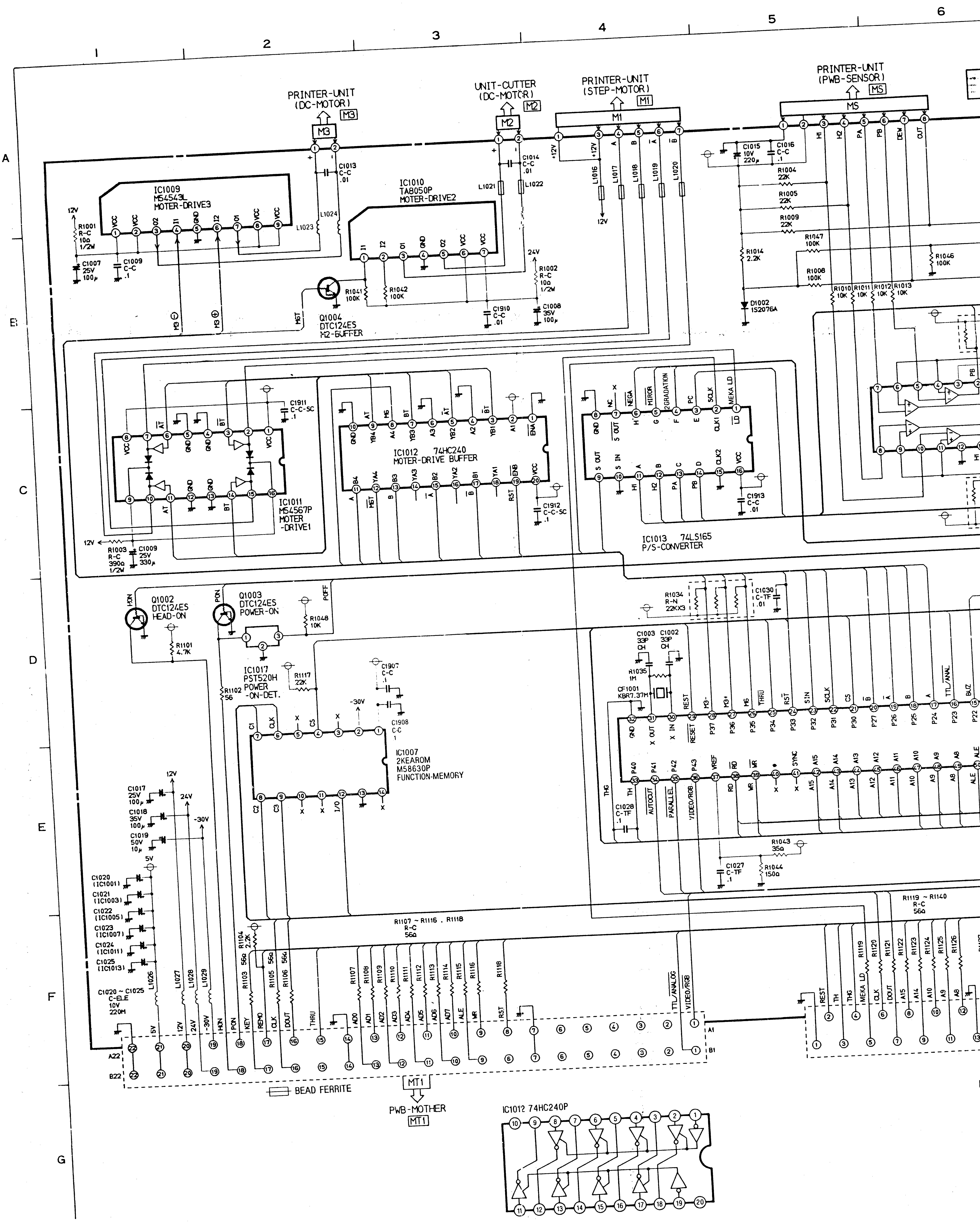
1. Die Gleichspannungen wurden vom angezeigten Punkt gegen Schaltungsmasse mit einem Hochohm-Voltmeter gemessen.
2. Das ist ein Basisschaltplan. Technische Änderungen zwecks Verbesserungen sind vorbehalten.

⚠

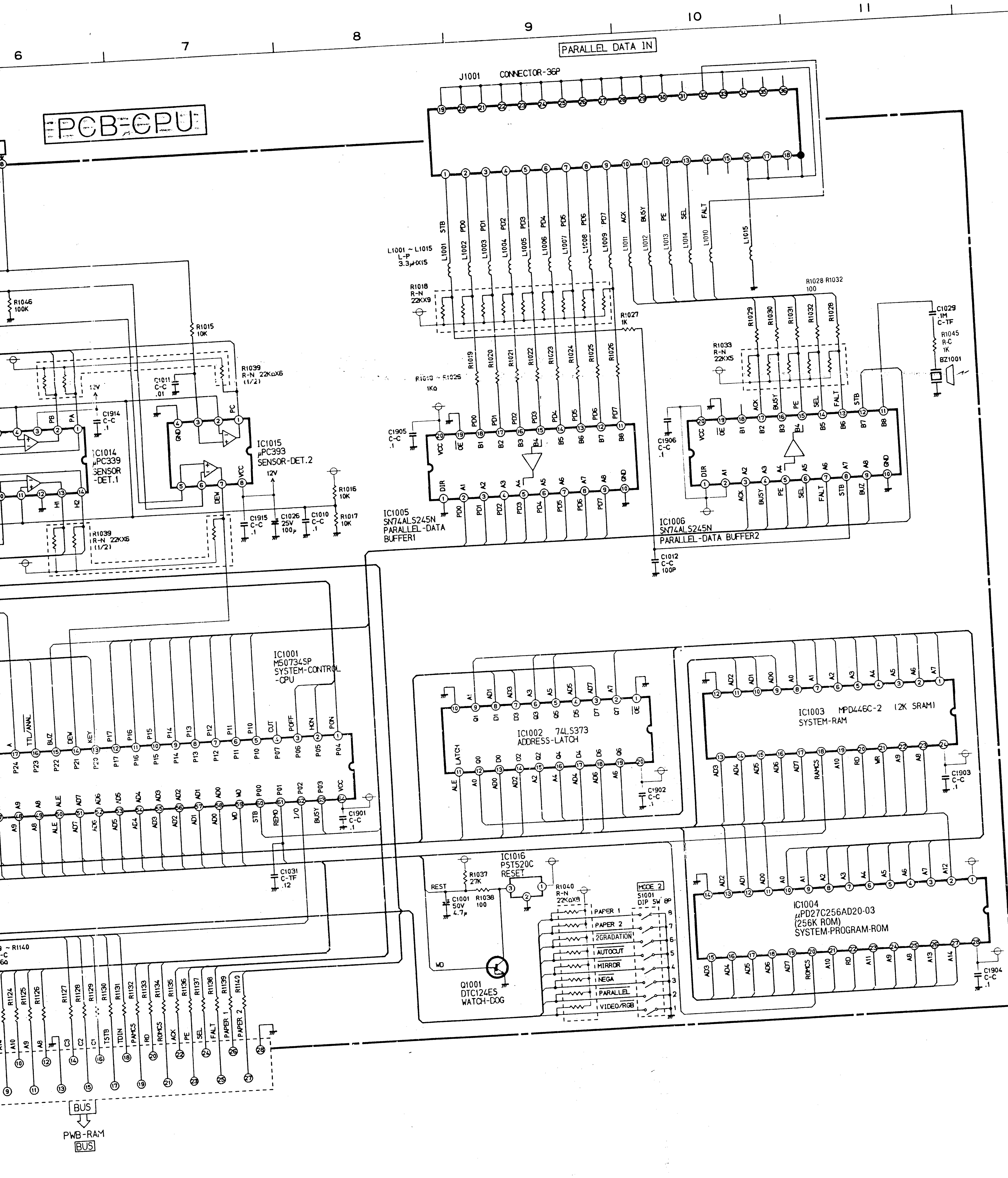
Sicherheitshinweis :

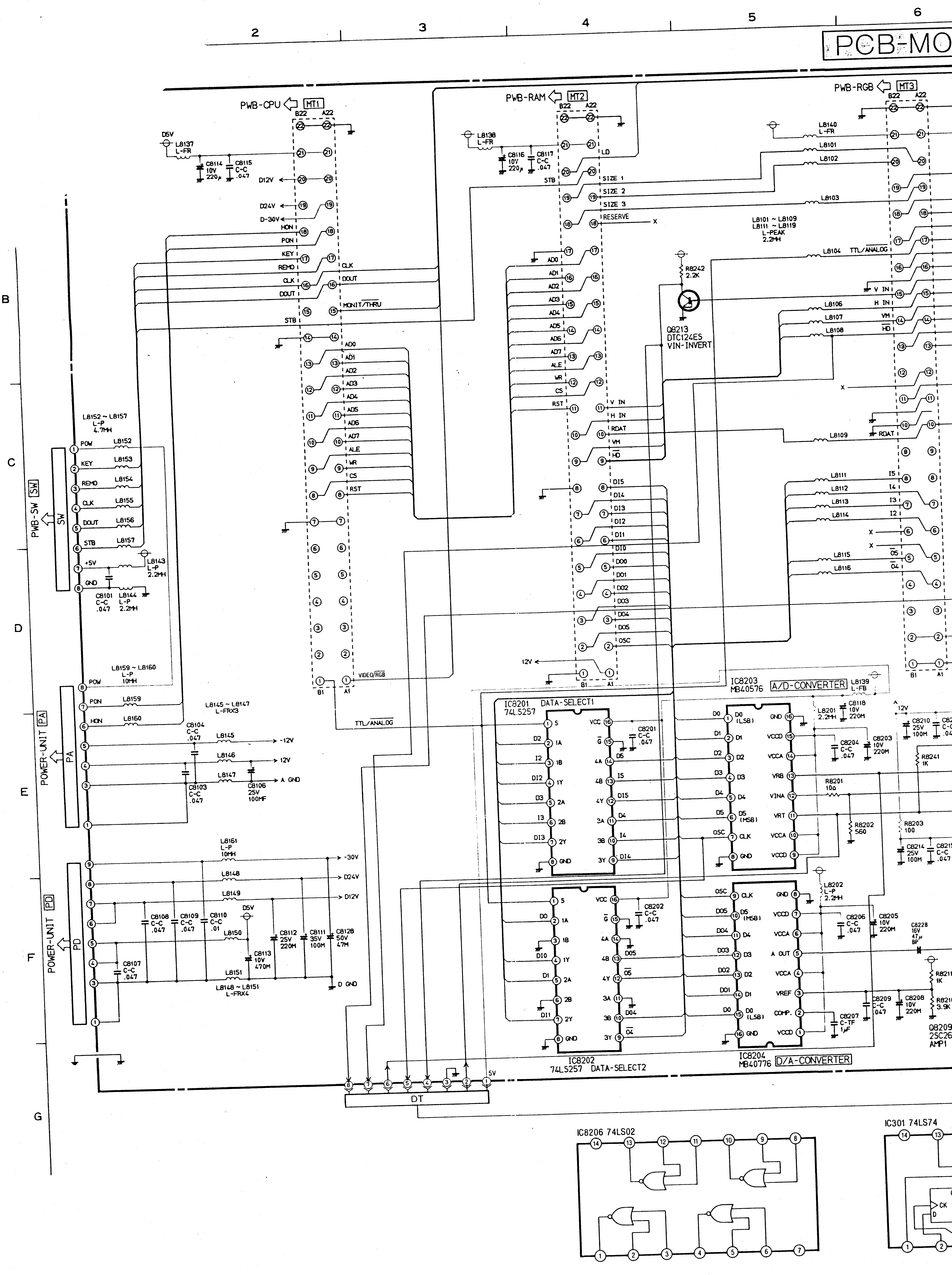
Die mit diesem Symbol gekennzeichneten Bauteile haben spezielle Eingenschaften und sind für die Sicherheit und Leistungsfähigkeit wichtig. Beim Austausch der Bauteile nur Teile mit gleichem Wert und Eigenschaften verwenden, sonst ist die Sicherheit und Leistung des Gerätes gefährdet.

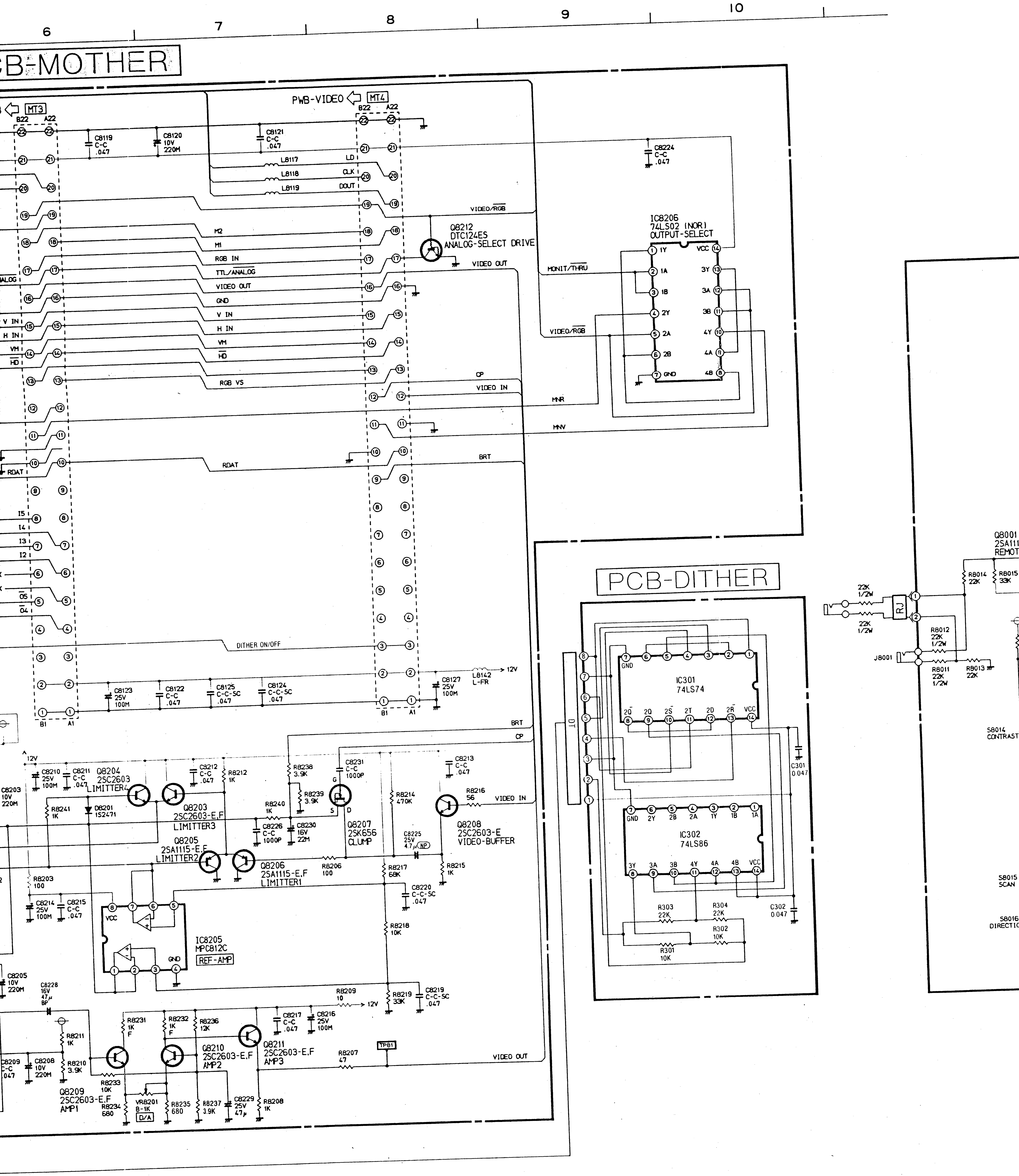
Printed in JAPAN.



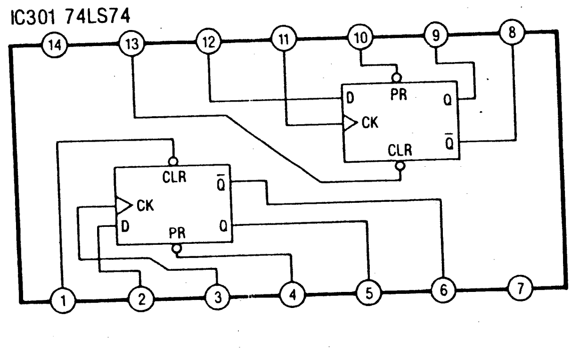
1
2
3
4
5
6
A
B
C
D
E
F
G
PRINTER-UNIT (DC-MOTOR) M3
UNIT-CUTTER (DC-MOTOR) M2
PRINTER-UNIT (STEP-MOTOR) M1
PRINTER-UNIT (PWB-SENSOR) MS
IC1009 M54543L MOTER-DRIVE3
IC1010 TA8050P MOTER-DRIVE2
IC1011 M54567P MOTER -DRIVE1
IC1012 74HC240 MOTER-DRIVE BUFFER
IC1013 74LS165 P/S-CONVERTER
Q1004 DTC124ES M2-BUFFER
Q1002 DTC124ES HEAD-ON
Q1003 DTC124ES POWER-ON
IC1017 PST520H POWER -ON-DET.
IC1007 2KEAROM M58630P FUNCTION-MEMORY
R1001 R-C 10Ω 1/2W
C1007 25V 100μ
C1009 C-C .1
C1013 C-C .01
C1014 C-C .01
R1002 R-C 10Ω 1/2W
C1008 35V 100μ
C1910 C-C .01
R1041 100K
R1042 100K
C1911 C-C-SC .1
C1912 C-C-SC .1
C1913 C-C .01
R1003 R-C 390Ω 1/2W
C1009 25V 330μ
C1015 10V 220μ
C1016 C-C .1
R1004 22K
R1005 22K
R1009 22K
R1047 100K
R1046 100K
R1008 100K
R1014 2.2K
R1010 10K
R1011 10K
R1012 10K
R1013 10K
D1002 1S2076A
R1034 R-N 22KX3
C1030 C-TF .01
C1003 33P CH
C1002 33P CH
R1035 1M
CF1001 KBR7.37M
R1048 10K
R1101 4.7K
R1102 56
R1117 22K
C1907 C-C .1
C1908 C-C 1
C1028 C-TF .1
C1027 C-TF .1
R1043 35Ω
R1044 150Ω
C1017 25V 100μ
C1018 35V 100μ
C1019 50V 10μ
C1020 (IC1001)
C1021 (IC1003)
C1022 (IC1005)
C1023 (IC1007)
C1024 (IC1011)
C1025 (IC1013)
C1020 ~ C1025 C-ELE 10V 220M
R1104 2.2K
R1107 ~ R1116 . R1118 R-C 56Ω
R1119 ~ R1140 R-C 56Ω
L1016
L1017
L1018
L1019
L1020
L1021
L1022
L1023
L1024
L1026
L1027
L1028
L1029
12V
24V
-30V
5V
M3⊖
M3⊕
M6T
HON
PON
POFF
REST
TH
THG
MEKA LD
CLK
DOUT
TTL/ANALOG
VIDEO/RGB
KEY
REMO
DOUT
THRU
AD0
AD1
AD2
AD3
AD4
AD5
AD6
AD7
ALE
WR
RST
A1
B1
A22
B22
BEAD FERRITE
MT1
PWB-MOTHER MT1
IC1012 74HC240P


6
7
8
9
10
11
PARALLEL DATA IN
PCB-CPU
J1001 CONNECTOR-36P
STB
PD0
PD1
PD2
PD3
PD4
PD5
PD6
PD7
ACK
BUSY
PE
SEL
FALT
L1001 ~ L1015
L-P
3.3μHX15
R1018
R-N
22KX9
R1027
1K
R1028 R1032
100
R1033
R-N
22KX5
R1019 ~ R1026
1KΩ
C1029
.1M
C-TF
R1045
R-C
1K
BZ1001
C1905
C-C
.1
C1906
C-C
.1
IC1005
SN74ALS245N
PARALLEL-DATA
BUFFER1
IC1006
SN74ALS245N
PARALLEL-DATA BUFFER2
C1012
C-C
100P
R1046
100K
R1015
10K
R1039
R-N 22KΩX6
(1/2)
C1011
C-C
.01
12V
C1914
C-C
.1
IC1014
μPC339
SENSOR
-DET.1
IC1015
μPC393
SENSOR-DET.2
DEW
C1915
C-C
.1
C1026
25V
100μ
C1010
C-C
.1
R1016
10K
R1017
10K
R1039
R-N 22KX6
(1/2)
IC1001
M50734SP
SYSTEM-CONTROL
-CPU
C1901
C-C
.1
C1031
C-TF
.12
IC1002 74LS373
ADDRESS-LATCH
C1902
C-C
.1
IC1003 MPD446C-2 (2K SRAM)
SYSTEM-RAM
C1903
C-C
.1
IC1016
PST520C
RESET
R1037
27K
REST
C1001
50V
4.7μ
R1038
100
R1040
R-N
22KΩX8
MODE 2
S1001
DIP SW 8P
PAPER 1
PAPER 2
2GRADATION
AUTOCUT
MIRROR
NEGA
PARALLEL
VIDEO/RGB
WD
Q1001
DTC124ES
WATCH-DOG
IC1004
μPD27C256AD20-03
(256K ROM)
SYSTEM-PROGRAM-ROM
C1904
C-C
.1
R1124
R1125
R1126
R1127
R1128
R1129
R1130
R1131
R1132
R1133
R1134
R1135
R1136
R1137
R1138
R1139
R1140
A10
A9
A8
C3
C2
C1
TSTB
RAMCS
RD
ROMCS
ACK
PE
SEL
FALT
PAPER 1
PAPER 2
BUS
PWB-RAM
BUS

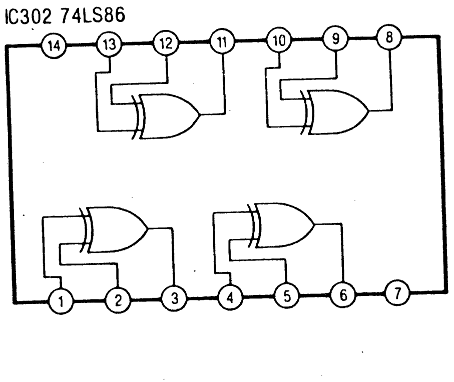

PCB-MO
2
3
4
5
6
B
C
D
E
F
G
PWB-CPU MT1
PWB-RAM MT2
PWB-RGB MT3
B22 A22
B1 A1
D5V
L8137 L-FR
C8114 10V 220μ
C8115 C-C .047
D12V
D24V
D-30V
HON
PON
KEY
REMO
CLK
DOUT
STB
MONIT/THRU
AD0
AD1
AD2
AD3
AD4
AD5
AD6
AD7
ALE
WR
CS
RST
VIDEO/RGB
TTL/ANALOG
L8138 L-FR
C8116 10V 220μ
C8117 C-C .047
LD
SIZE 1
SIZE 2
SIZE 3
RESERVE
V IN
H IN
RDAT
VM
HD
D15
D14
D13
D12
D11
D10
D00
D01
D02
D03
D04
D05
OSC
12V
L8140 L-FR
L8101
L8102
L8103
L8101 ~ L8109
L8111 ~ L8119
L-PEAK
2.2MH
L8104
R8242 2.2K
Q8213 DTC124ES VIN-INVERT
L8106
L8107
L8108
L8109
L8111
L8112
L8113
L8114
L8115
L8116
I5
I4
I3
I2
O5
O4
PWB-SW SW
L8152 ~ L8157 L-P 4.7MH
POW
L8152
L8153
L8154
L8155
L8156
L8157
+5V
GND
L8143 L-P 2.2MH
C8101 C-C .047
L8144 L-P 2.2MH
L8159 ~ L8160 L-P 10MH
L8159
L8160
POWER-UNIT PA
L8145 ~ L8147 L-FRX3
C8104 C-C .047
L8145
L8146
L8147
-12V
A GND
C8103 C-C .047
C8106 25V 100MF
POWER-UNIT PD
L8161 L-P 10MH
L8148
L8149
-30V
C8108 C-C .047
C8109 C-C .047
C8110 C-C .01
L8150
C8112 25V 220M
C8111 35V 100M
C8128 50V 47M
C8113 10V 470M
C8107 C-C .047
L8151
L8148 ~ L8151 L-FRX4
D GND
IC8201 DATA-SELECT1 74LS257
C8201 C-C .047
IC8202 74LS257 DATA-SELECT2
C8202 C-C .047
IC8203 MB40576 A/D-CONVERTER
L8139 L-FB
C8118 10V 220M
L8201 2.2MH
C8204 C-C .047
C8203 10V 220M
C8210 25V 100M
R8241 1K
R8201 10Ω
R8202 560
R8203 100
C8214 25V 100M
IC8204 MB40776 D/A-CONVERTER
L8202 L-P 2.2MH
C8206 C-C .047
C8205 10V 220M
C8228 16V 47μ BP
C8207 C-TF 1μF
C8209 C-C .047
C8208 10V 220M
Q8209 2SC26 AMP1
VCC
GND
VCCD
VCCA
VRB
VINA
VRT
A OUT
VREF
COMP.
(LSB)
(MSB)
DT
5V
IC8206 74LS02
IC301 74LS74
CK
D

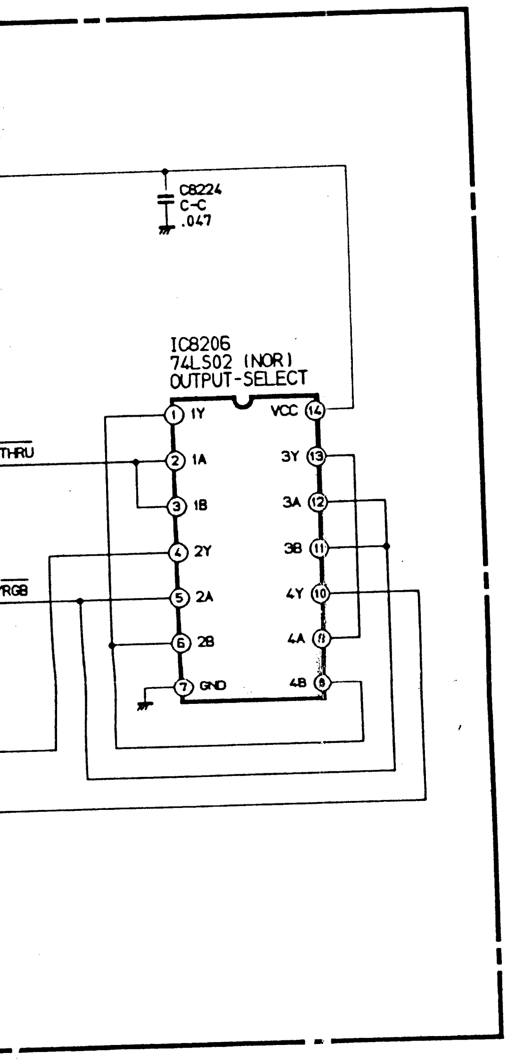

6
7
8
9
10
CB-MOTHER
PWB-VIDEO
MT3
MT4
B22
A22
C8119 C-C .047
C8120 10V 220M
C8121 C-C .047
C8224 C-C .047
L8117
L8118
L8119
LD
CLK
DOUT
VIDEO/RGB
Q8212 DTC124ES ANALOG-SELECT DRIVE
IC8206 74LS02 (NOR) OUTPUT-SELECT
VCC
GND
MONIT/THRU
VIDEO OUT
M2
M1
RGB IN
TTL/ANALOG
VIDEO OUT
GND
V IN
H IN
VM
HD
RGB VS
CP
VIDEO IN
MNR
MNV
RDAT
BRT
DITHER ON/OFF
I5
I4
I3
I2
O5
O4
C8123 25V 100M
C8122 C-C .047
C8125 C-C-SC .047
C8124 C-C-SC .047
C8127 25V 100M
L8142 L-FR
12V
B1
A1
PCB-DITHER
DT
IC301 74LS74
IC302 74LS86
C301 0.047
C302 0.047
R303 22K
R304 22K
R302 10K
R301 10K
Q8001 2SA111 REMOT
R8014 22K
R8015 33K
22K 1/2W
RJ
R8012 22K 1/2W
J8001
R8011 22K 1/2W
R8013 22K
S8014 CONTRAST
S8015 SCAN
S8016 DIRECTIC
C8203 10V 220M
C8210 25V 100M
C8211 C-C .047
Q8204 2SC2603 LIMITTER4
C8212 C-C .047
R8212 1K
R8238 3.9K
R8239 3.9K
C8231 C-C 1000P
C8213 C-C .047
R8241 1K
D8201 1S2471
Q8203 2SC2603-E,F LIMITTER3
R8240 1K
C8226 C-C 1000P
C8230 16V 22M
Q8207 2SK656 CLUMP
R8214 470K
R8216 56
Q8208 2SC2603-E VIDEO-BUFFER
C8225 25V 4.7μ NP
Q8205 2SA1115-E,F LIMITTER2
Q8206 2SA1115-E,F LIMITTER1
R8206 100
R8217 68K
R8215 1K
R8203 100
C8214 25V 100M
C8215 C-C .047
C8220 C-C-SC .047
IC8205 MPC812C REF-AMP
R8218 10K
C8205 10V 220M
C8228 16V 47μ BP
R8209 10
R8219 33K
C8219 C-C-SC .047
R8231 1K F
R8232 1K F
R8236 12K
C8217 C-C .047
C8216 25V 100M
R8211 1K
R8210 3.9K
C8209 C-C .047
C8208 10V 220M
Q8210 2SC2603-E,F AMP2
Q8211 2SC2603-E,F AMP3
TP81
R8207 47
VIDEO OUT
R8233 10K
VR8201 B-1K D/A
R8235 680
R8237 3.9K
C8229 25V 47μ
R8208 1K
Q8209 2SC2603-E,F AMP1
R8234 680

IC301 74LS74

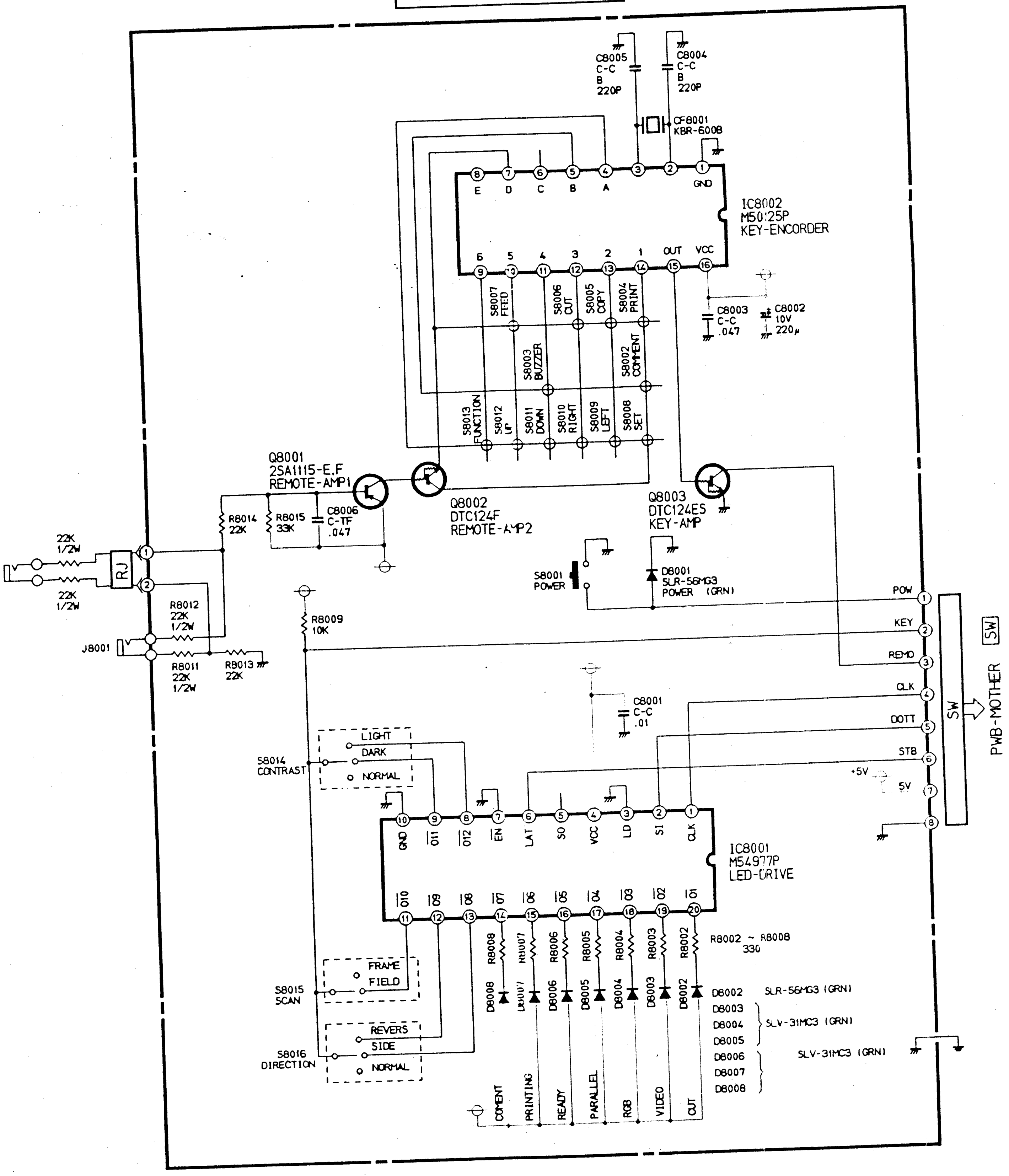

D
PR
Q
CK
CLR
Q̄
1
2
3
4
5
6
7
8
9
10
11
12
13
14

IC302 74LS86

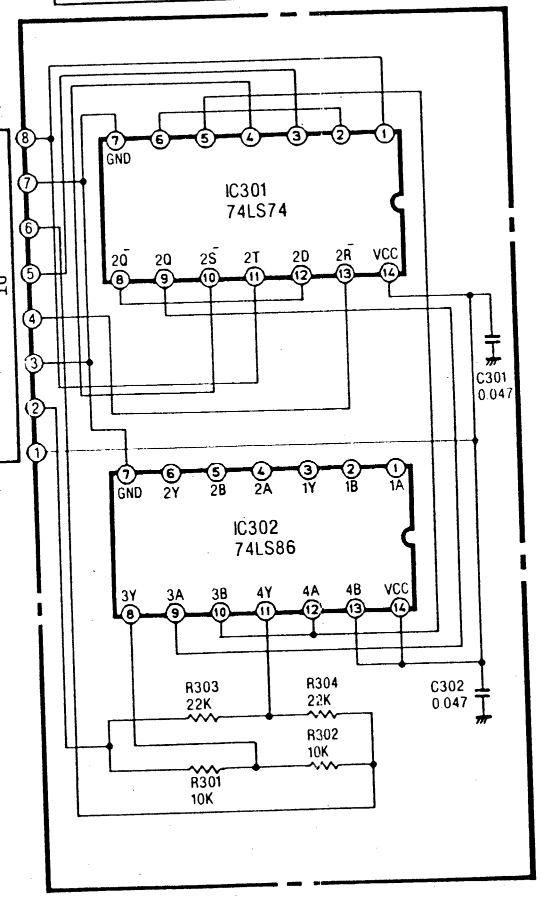

1
2
3
4
5
6
7
8
9
10
11
12
13
14


C8224
C-C
.047
IC8206
74LS02 (NOR)
OUTPUT-SELECT
THRU
RGB
1Y
1A
1B
2Y
2A
2B
GND
VCC
3Y
3A
3B
4Y
4A
4B

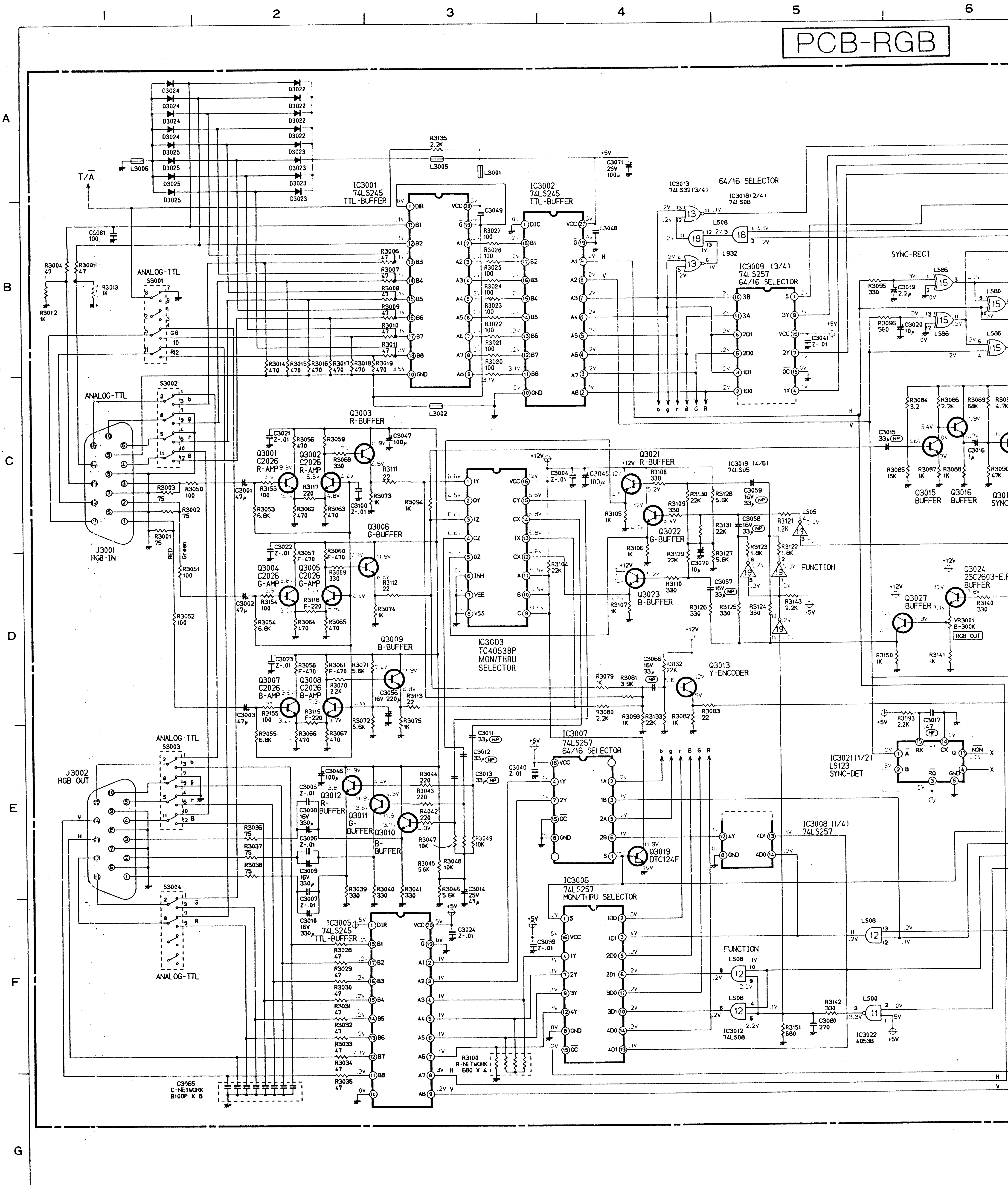
PCB-SW


C8005
C-C
B
220P
C8004
C-C
B
220P
CF8001
KBR-600B
IC8002
M50125P
KEY-ENCORDER
E
D
C
B
A
GND
OUT
VCC
C8003
C-C
.047
C8002
10V
220μ
S8007 FTED
S8006 CUT
S8005 COPY
S8004 PRINT
S8003 BUZZER
S8002 COMMENT
S8013 FUNCTION
S8012 UP
S8011 DOWN
S8010 RIGHT
S8009 LEFT
S8008 SET
Q8001
2SA1115-E,F
REMOTE-AMP1
Q8002
DTC124F
REMOTE-AMP2
Q8003
DTC124ES
KEY-AMP
R8014
22K
R8015
33K
C8006
C-TF
.047
22K
1/2W
RJ
R8012
22K
1/2W
J8001
R8011
22K
1/2W
R8013
22K
R8009
10K
S8001
POWER
D8001
SLR-56MG3
POWER (GRN)
POW
KEY
REMO
CLK
DOTT
STB
+5V
5V
SW
PWB-MOTHER
C8001
C-C
.01
S8014
CONTRAST
LIGHT
DARK
NORMAL
IC8001
M54977P
LED-DRIVE
GND
O11
O12
EN
LAT
SO
VCC
LD
SI
CLK
O10
O9
O8
O7
O6
O5
O4
O3
O2
O1
S8015
SCAN
FRAME
FIELD
S8016
DIRECTION
REVERS
SIDE
NORMAL
R8008
R8007
R8006
R8005
R8004
R8003
R8002
R8002 ~ R8008
330
D8008
D8007
D8006
D8005
D8004
D8003
D8002
D8002 SLR-56MG3 (GRN)
D8003
D8004 SLV-31MC3 (GRN)
D8005
D8006 SLV-31MC3 (GRN)
D8007
D8008
COMENT
PRINTING
READY
PARALLEL
RGB
VIDEO
CUT

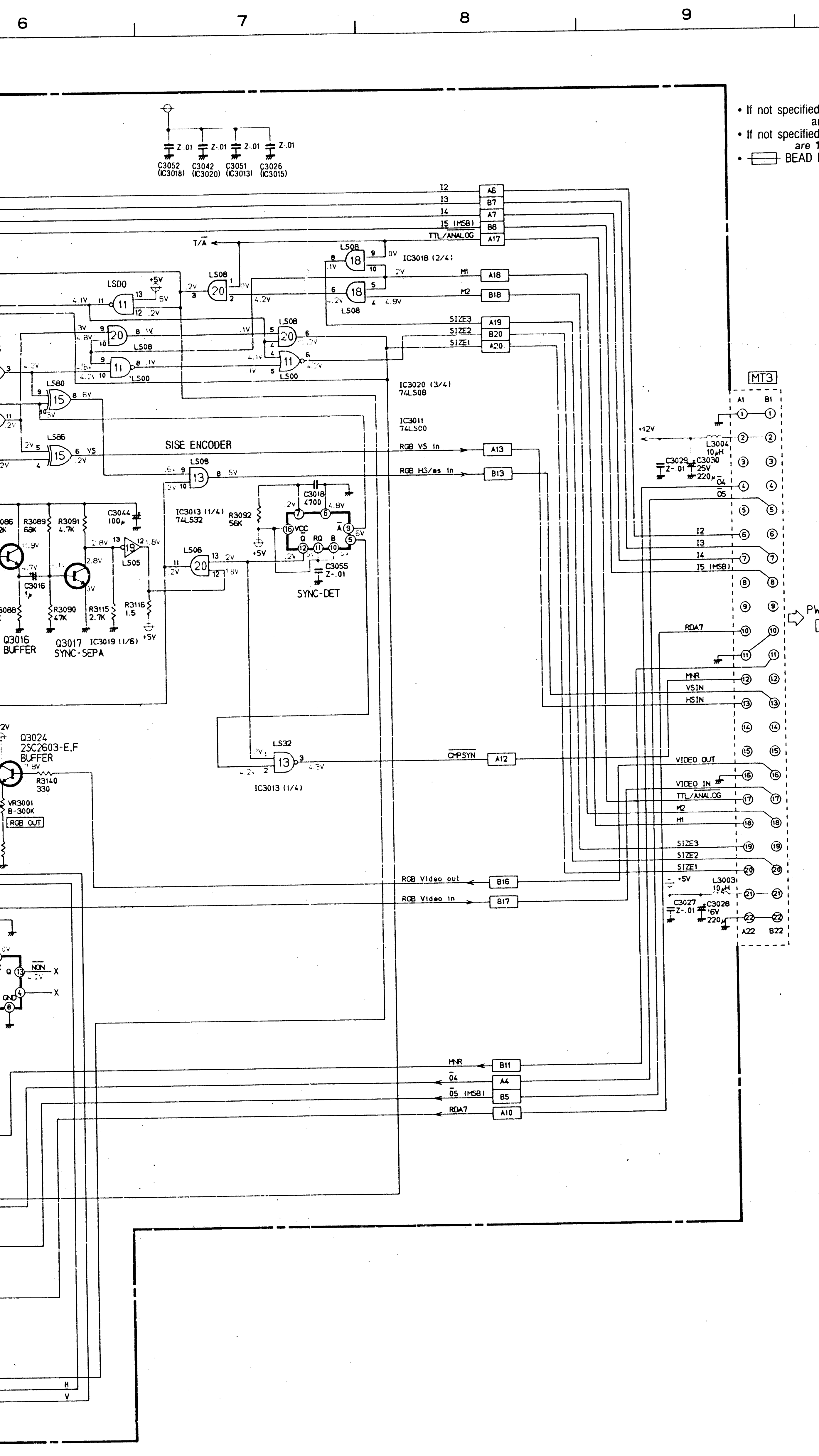
PCB-DITHER


IC301
74LS74
GND
2Q
2Q
2S
2T
2D
2R
VCC
C301
0.047
IC302
74LS86
GND
2Y
2B
2A
1Y
1B
1A
3Y
3A
3B
4Y
4A
4B
VCC
R303
22K
R304
22K
R302
10K
R301
10K
C302
0.047

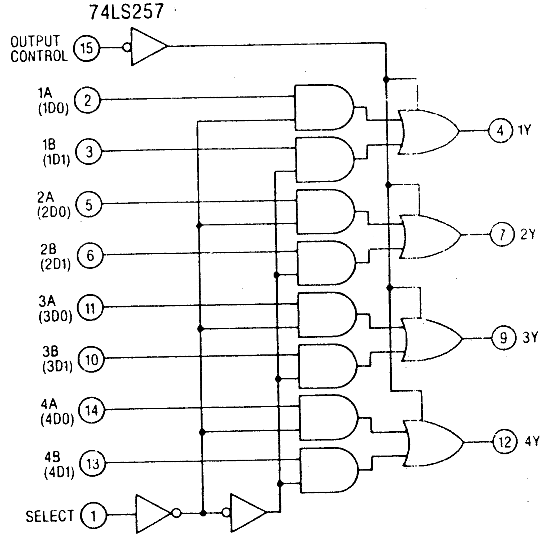
PCB-RGB


1
2
3
4
5
6
A
B
C
D
E
F
G
PCB-RGB
D3024
D3025
D3022
D3023
T/A
L3006
L3005
L3001
L3002
R3135 2.2K
+5V
C3071 25V 100μ
IC3001 74LS245 TTL-BUFFER
IC3002 74LS245 TTL-BUFFER
C3049
C3048
C3081 100
R3004 47
R3005 47
R3013 1K
R3012 1K
ANALOG-TTL
S3001
S3002
S3003
S3004
J3001 RGB-IN
J3002 RGB OUT
R3006 47
R3007 47
R3008 47
R3009 47
R3010 47
R3011 47
R3014 470
R3015 470
R3016 470
R3017 470
R3018 470
R3019 470
R3020 100
R3021 100
R3022 100
R3023 100
R3024 100
R3025 100
R3026 100
R3027 100
IC3013 74LS32(3/4)
64/16 SELECTOR
IC3018(2/4) 74LS08
LS08
LS32
IC3008 (3/4) 74LS257 64/16 SELECTOR
C3041 Z-.01
SYNC-RECT
LS86
R3095 330
C3019 2.2μ
R3096 560
C3020 10μ
Q3003 R-BUFFER
Q3001 C2026 R-AMP
Q3002 C2026 R-AMP
Q3006 G-BUFFER
Q3004 C2026 G-AMP
Q3005 C2026 G-AMP
Q3009 B-BUFFER
Q3007 C2026 B-AMP
Q3008 C2026 B-AMP
C3021 Z-.01
C3022 Z-.01
C3023 Z-.01
C3047 100μ
C3056 16V 220μ
C3100 Z-.01
R3003 75
R3002 75
R3001 75
R3050 100
R3051 100
R3052 100
RED
Green
IC3003 TC4053BP MON/THRU SELECTOR
C3004 Z-.01
C3045 100μ
Q3021 R-BUFFER
Q3022 G-BUFFER
Q3023 B-BUFFER
Q3013 Y-ENCODER
IC3019 (4/6) 74LS05
LS05
FUNCTION
C3059 16V 33μ (NP)
C3058 16V 33μ (NP)
C3057 16V 33μ (NP)
C3070 10μ
C3066 16V 33μ (NP)
C3015 33μ (NP)
Q3015 BUFFER
Q3016 BUFFER
Q3024 2SC2603-E,F BUFFER
Q3027 BUFFER
VR3001 B-300K
RGB OUT
IC3021(1/2) LS123 SYNC-DET
NON
C3017 .47 (NP)
R3093 2.2K
IC3007 74LS257 64/16 SELECTOR
C3040 Z-.01
Q3019 DTC124F
Q3012 R-BUFFER
Q3011 G-BUFFER
Q3010 B-BUFFER
C3046 100μ
C3005 Z-.01
C3008 16V 330μ
C3006 Z-.01
C3009 16V 330μ
C3007 Z-.01
C3010 16V 330μ
C3011 33μ (NP)
C3012 33μ (NP)
C3013 33μ (NP)
C3014 25V 47μ
R3036 75
R3037 75
R3038 75
IC3005 74LS245 TTL-BUFFER
C3024 Z-.01
R3028 47
R3029 47
R3030 47
R3031 47
R3032 47
R3033 47
R3034 47
R3035 47
C3065 C-NETWORK B100P X 8
R3100 R-NETWORK 680 X 4
IC3006 74LS257 MON/THRU SELECTOR
C3039 Z-.01
IC3008 (1/4) 74LS257
LS08
FUNCTION
IC3012 74LS08
R3142 330
C3060 270
R3151 680
LS00
IC3022 4053B
b g r B G R
H
V

- If not specified TRANSISTORS are 2SC2603-EF
- If not specified DIODES are 1S2076A
- ▭ BEAD FERRITE

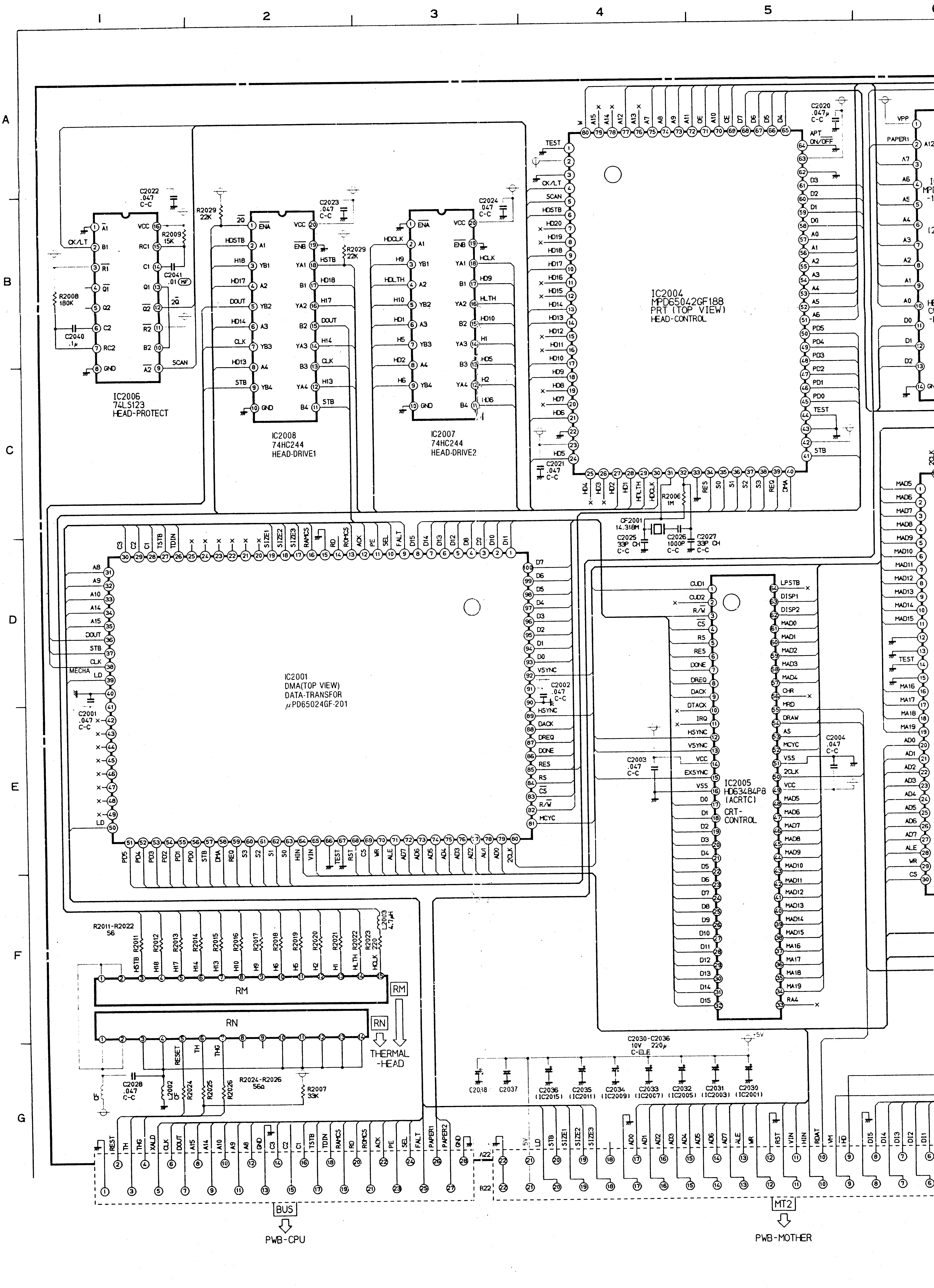

6
7
8
9
10
11
C3052 (IC3018) Z-.01
C3042 (IC3020) Z-.01
C3051 (IC3013) Z-.01
C3026 (IC3015) Z-.01
I2 A6
I3 B7
I4 A7
I5 (MSB) B8
TTL/ANALOG A17
T/A
LS08
IC3018 (2/4)
M1 A18
M2 B18
LS00
SIZE3 A19
SIZE2 B20
SIZE1 A20
IC3020 (3/4) 74LS08
IC3011 74LS00
LS86
SISE ENCODER
RGB VS In A13
RGB HS/cs In B13
C3018 4700
IC3013 (1/4) 74LS32
R3092 56K
SYNC-DET
C3055 Z-.01
C3044 100μ
R3089 68K
R3091 4.7K
C3016 1μ
R3090 47K
R3115 2.7K
R3116 1.5
Q3016 BUFFER
Q3017 SYNC-SEPA
IC3019 (1/6)
LS05
Q3024 2SC2603-E,F BUFFER
R3140 330
VR3001 B-300K
RGB OUT
LS32
CMPSYN A12
IC3013 (1/4)
RGB Video out B16
RGB Video In B17
MNR B11
04 A4
05 (MSB) B5
RDA7 A10
MT3
A1 B1
+12V
L3004 10μH
C3029 Z-.01
C3030 25V 220μ
04
05
I2
I3
I4
I5 (MSB)
RDA7
MNR
VSIN
HSIN
VIDEO OUT
VIDEO IN
TTL/ANALOG
M2
M1
SIZE3
SIZE2
SIZE1
+5V
L3003 10μH
C3027 Z-.01
C3028 6V 220μ
A22 B22
PWB-MOTHER MT3
NON
GND
H
V

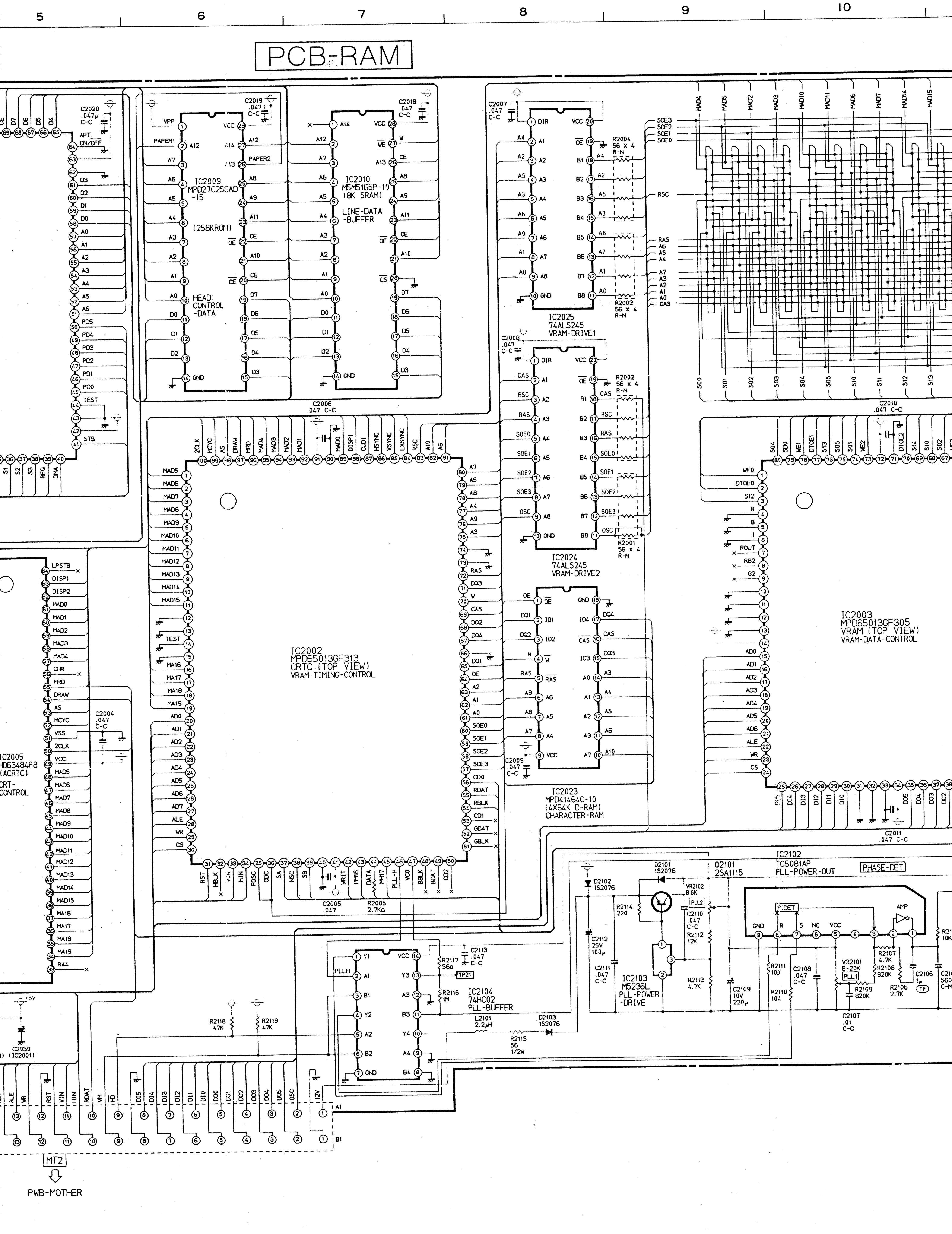
IC3006,IC3007,IC3008
74LS257

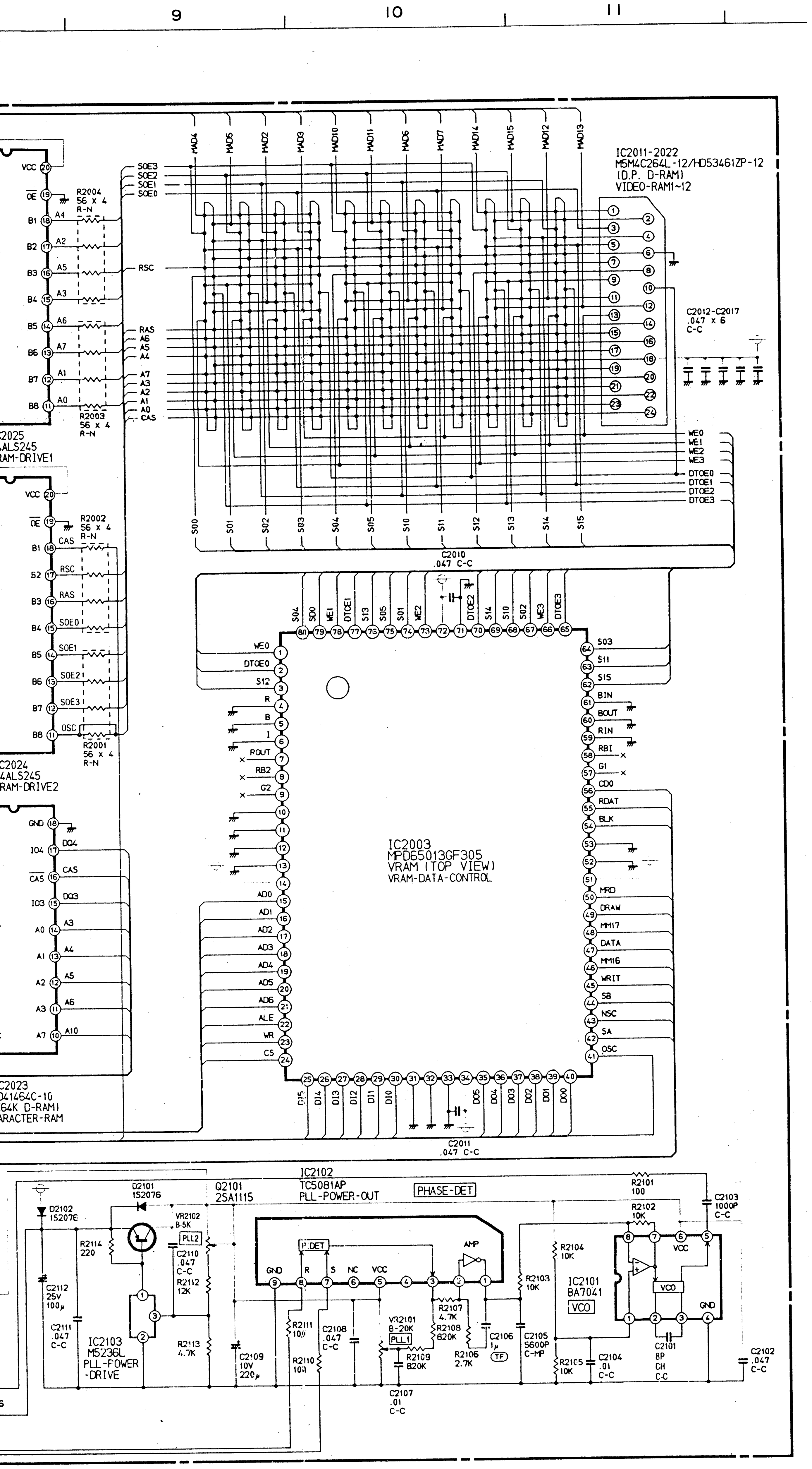

OUTPUT CONTROL 15
1A (1D0) 2
1B (1D1) 3
2A (2D0) 5
2B (2D1) 6
3A (3D0) 11
3B (3D1) 10
4A (4D0) 14
4B (4D1) 13
SELECT 1
4 1Y
7 2Y
9 3Y
12 4Y

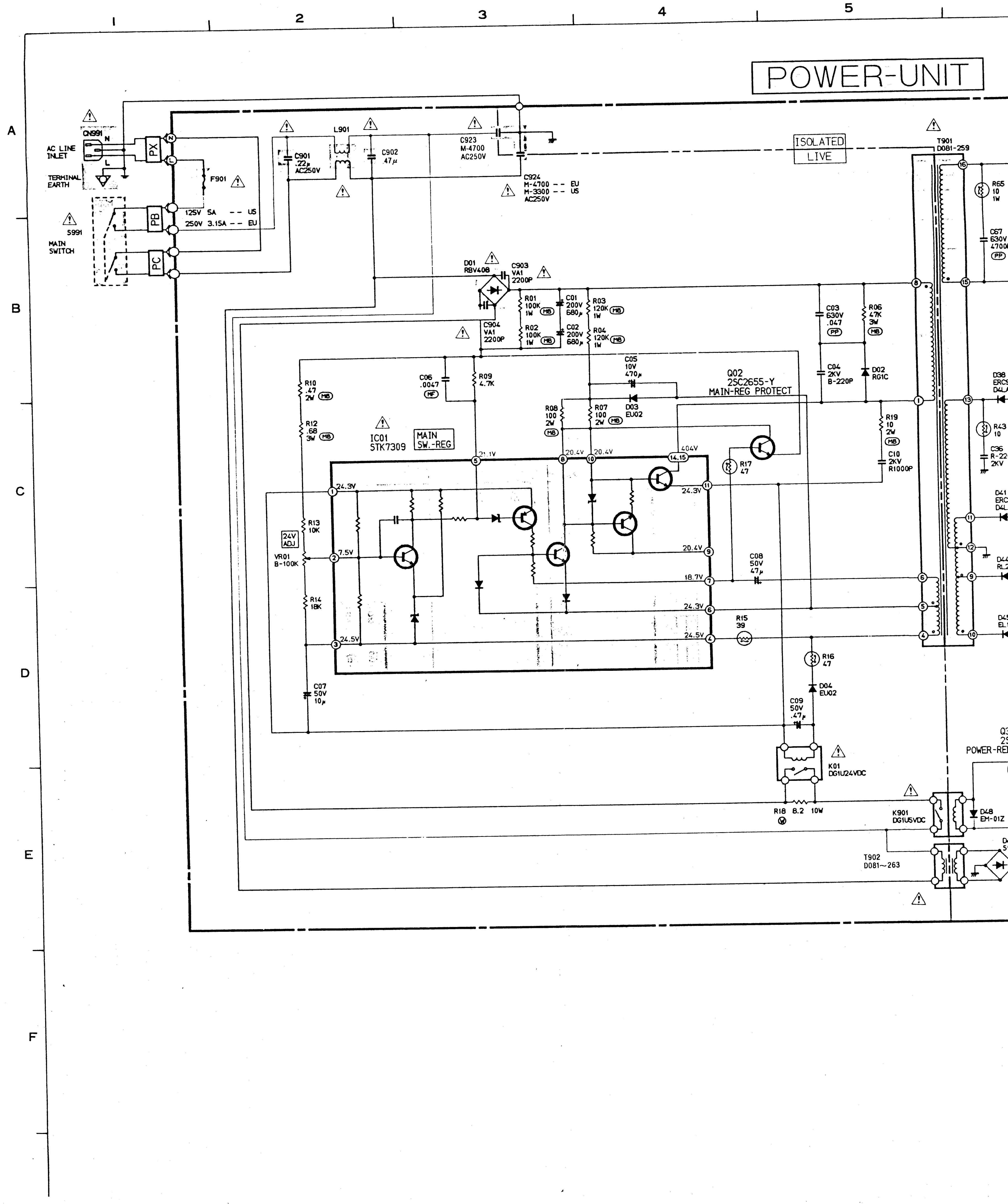
INPUTS				OUTPUT Y
OUTPUT CONTROL	SELECT	A (D0)	B (D1)	
H	X	X	X	Z
L	L	L	X	L
L	L	H	X	H
L	H	X	L	L
L	H	X	H	H

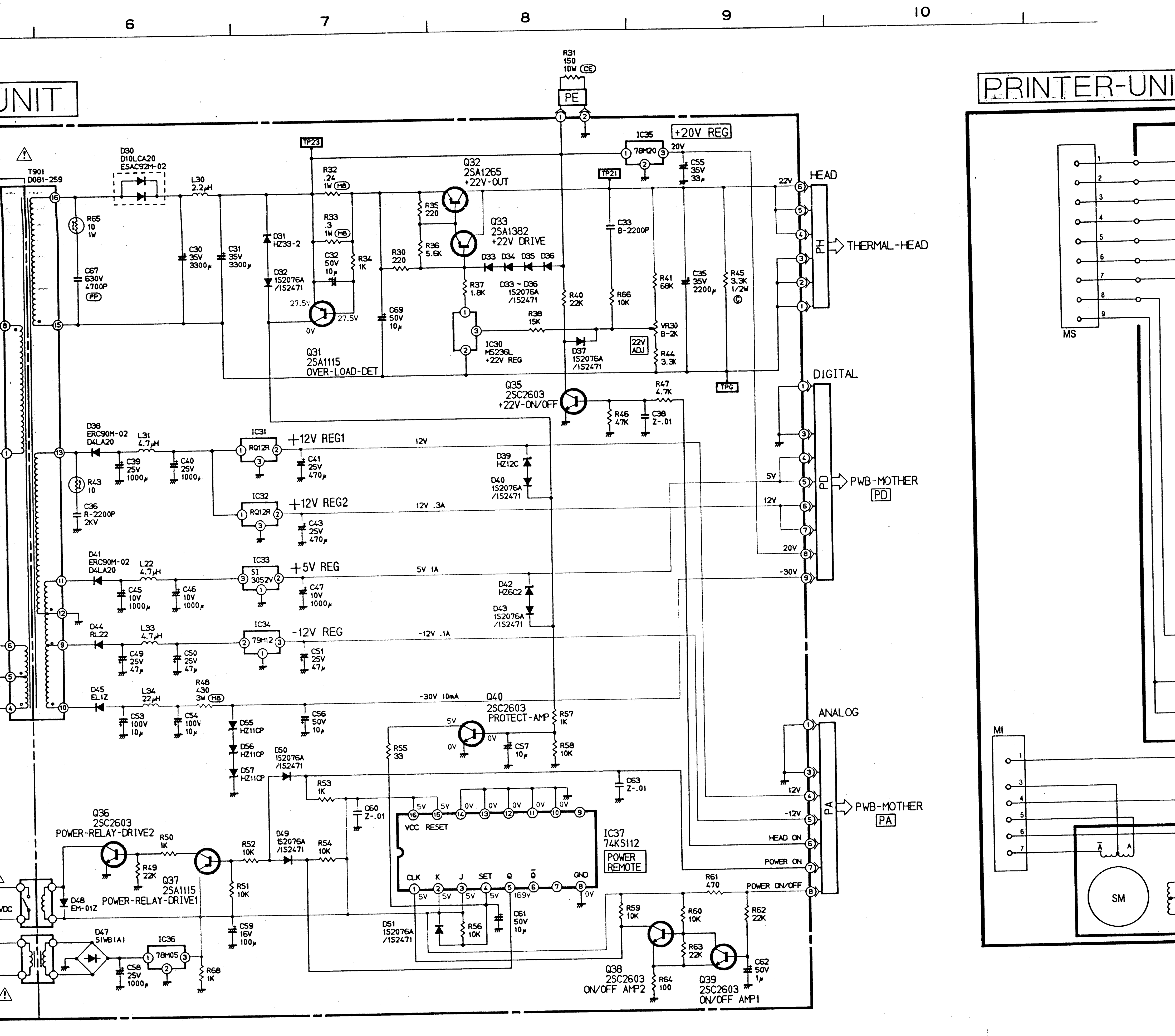
H=HIGH Level L=LOW Level
X=Immaterial Z=High Impedance

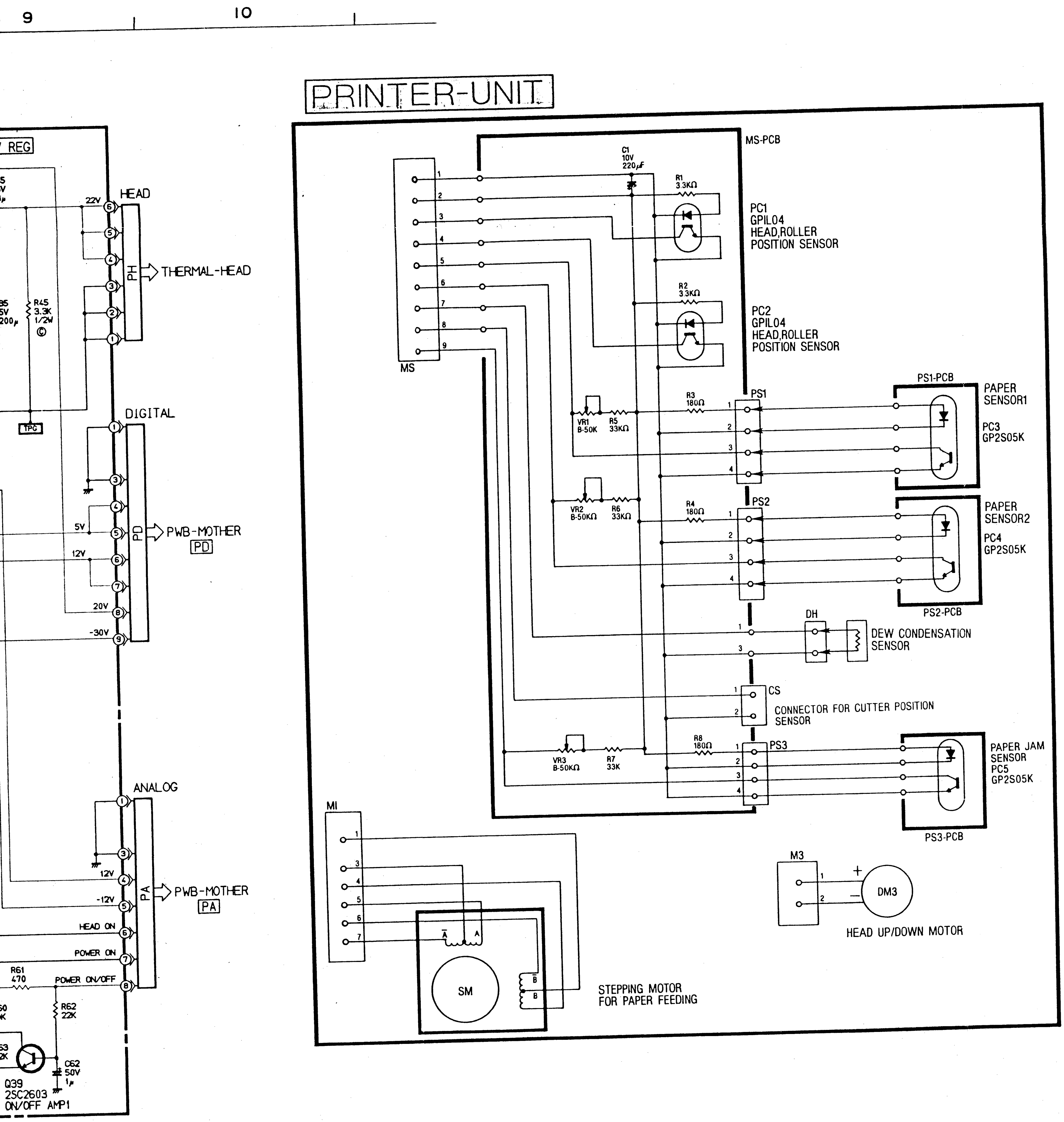

1
2
3
4
5
A
B
C
D
E
F
G
IC2006
74LS123
HEAD-PROTECT
C2022 .047 C-C
R2009 15K
C2041 .01 (MF)
R2008 180K
C2040 .1μ
CK/LT
SCAN
IC2008
74HC244
HEAD-DRIVE1
R2029 22K
C2023 .047 C-C
HDSTB
H18
HD17
DOUT
HD14
CLK
HD13
STB
IC2007
74HC244
HEAD-DRIVE2
C2024 .047 C-C
HDCLK
H9
HDLTH
H10
HD1
H5
HD2
H6
HCLK
HD9
HLTH
HD10
H1
HD5
H2
HD6
IC2004
MPD65042GF188
PRT (TOP VIEW)
HEAD-CONTROL
C2020 .047μ C-C
APT ON/OFF
TEST
C2021 .047 C-C
R2006 1M
CF2001 14.318M
C2025 33P CH C-C
C2026 1000P C-C
C2027 33P CH C-C
IC2001
DMA(TOP VIEW)
DATA-TRANSFOR
μPD65024GF-201
C2001 .047 C-C
C2002 .047 C-C
MECHA
IC2005
HD63484P8
(ACRTC)
CRT-
CONTROL
C2003 .047 C-C
C2004 .047 C-C
R2011-R2022 56
L2003 4.7μH
RM
RN
THERMAL
-HEAD
C2028 .047 C-C
L2002
R2024-R2026 56Ω
R2007 33K
C2030-C2036 10V 220μ C-ELE
C2038
C2037
C2036 (IC2015)
C2035 (IC2011)
C2034 (IC2009)
C2033 (IC2007)
C2032 (IC2005)
C2031 (IC2003)
C2030 (IC2001)
+5V
BUS
PWB-CPU
MT2
PWB-MOTHER
RESET
TH
THG
XALD
CLK
DOUT
A15
A14
A10
A9
GND
C3
C2
C1
TSTB
TDIN
RAMCS
RD
ROMCS
ACK
PE
SEL
FALT
PAPER1
PAPER2
5V
LD
STB
SIZE1
SIZE2
SIZE3
AD0
AD1
AD2
AD3
AD4
AD5
AD6
AD7
ALE
WR
RST
VIN
HIN
RDAT
VM
HD
D15
D14
D13
D12
D11
A22
R22
VPP
PAPER1
A12
TEST
2CLK


5
6
7
8
9
10
PCB-RAM
C2020 .047μ C-C
APT ON/OFF
C2019 .047 C-C
VPP
PAPER1
PAPER2
IC2009 MPD27C256AD -15
(256KROM)
HEAD CONTROL -DATA
C2018 .047 C-C
IC2010 M5M5165P-10 (8K SRAM)
LINE-DATA -BUFFER
C2007 .047 C-C
IC2025 74ALS245 VRAM-DRIVE1
R2004 56 x 4 R-N
R2003 56 x 4 R-N
C2008 .047 C-C
IC2024 74ALS245 VRAM-DRIVE2
R2002 56 x 4 R-N
R2001 56 x 4 R-N
SOE3
SOE2
SOE1
SOE0
RSC
RAS
CAS
C2006 .047 C-C
IC2002 MPD65013GF313 CRTC (TOP VIEW) VRAM-TIMING-CONTROL
IC2023 MPD41464C-10 (4X64K D-RAM) CHARACTER-RAM
C2009 .047 C-C
C2010 .047 C-C
IC2003 MPD65013GF305 VRAM (TOP VIEW) VRAM-DATA-CONTROL
C2011 .047 C-C
IC2005 HD63484P8 (ACRTC) CRT- CONTROL
C2004 .047 C-C
C2005 .047
R2005 2.7KΩ
IC2102 TC5081AP PLL-POWER-OUT
PHASE-DET
D2101 1S2076
D2102 1S2076
Q2101 2SA1115
VR2102 B-5K
PLL2
R2114 220
C2110 .047 C-C
R2112 12K
C2112 25V 100μ
C2111 .047 C-C
IC2103 M5236L PLL-POWER -DRIVE
R2113 4.7K
C2109 10V 220μ
R2111 10Ω
R2110 10Ω
C2108 .047 C-C
VR2101 B-20K
PLL1
R2107 4.7K
R2108 820K
R2109 820K
R2106 2.7K
C2106 1μ
TF
C2107 .01 C-C
P.DET
AMP
C2113 .047 C-C
R2117 56Ω
TP21
R2116 1M
IC2104 74HC02 PLL-BUFFER
PLLH
L2101 2.2μH
R2115 56 1/2W
D2103 1S2076
R2118 47K
R2119 47K
C2030 (IC2001)
A1
B1
MT2
PWB-MOTHER


9
10
11
IC2011-2022
M5M4C264L-12/HD53461ZP-12
(D.P. D-RAM)
VIDEO-RAM1~12
MAD4
MAD5
MAD2
MAD3
MAD10
MAD11
MAD6
MAD7
MAD14
MAD15
MAD12
MAD13
SOE3
SOE2
SOE1
SOE0
RSC
RAS
A6
A5
A4
A7
A3
A2
A1
A0
CAS
R2004
56 x 4
R-N
R2003
56 x 4
R-N
VCC
OE
B1
B2
B3
B4
B5
B6
B7
B8
2025
ALS245
RAM-DRIVE1
R2002
56 x 4
R-N
OSC
R2001
56 x 4
R-N
C2024
4ALS245
RAM-DRIVE2
GND
IO4
DQ4
CAS
DQ3
IO3
A10
C2023
D41464C-10
(64K D-RAM)
ARACTER-RAM
C2012-C2017
.047 x 6
C-C
WE0
WE1
WE2
WE3
DTOE0
DTOE1
DTOE2
DTOE3
S00
S01
S02
S03
S04
S05
S10
S11
S12
S13
S14
S15
C2010
.047 C-C
IC2003
MPD65013GF305
VRAM (TOP VIEW)
VRAM-DATA-CONTROL
R
B
I
ROUT
RB2
G2
AD0
AD1
AD2
AD3
AD4
AD5
AD6
ALE
WR
CS
BIN
BOUT
RIN
RBI
GI
CD0
RDAT
BLK
MRD
DRAW
MM17
DATA
MM16
WRIT
SB
NSC
SA
D15
D14
D13
D12
D11
D10
D05
D04
D03
D02
D01
D00
C2011
.047 C-C
IC2102
TC5081AP
PLL-POWER-OUT
PHASE-DET
D2101
1S2076
Q2101
2SA1115
D2102
1S2076
VR2102
B-5K
PLL2
R2114
220
C2110
.047
C-C
R2112
12K
C2112
25V
100μ
C2111
.047
C-C
IC2103
M5236L
PLL-POWER
-DRIVE
R2113
4.7K
C2109
10V
220μ
P.DET
AMP
GND
S
NC
VCC
R2111
100
R2110
100
C2108
.047
C-C
VR2101
B-20K
PLL1
R2109
820K
R2107
4.7K
R2108
820K
R2106
2.7K
C2106
1μ
TF
C2107
.01
C-C
R2103
10K
C2105
5600P
C-MP
R2104
10K
R2105
10K
C2104
.01
C-C
IC2101
BA7041
VCO
R2101
100
R2102
10K
C2103
1000P
C-C
C2101
8P
CH
C-C
C2102
.047
C-C

1
2
3
4
5
A
B
C
D
E
F
POWER-UNIT
ISOLATED
LIVE
CN991
AC LINE INLET
TERMINAL EARTH
N
L
PX
PB
PC
F901
125V 5A -- US
250V 3.15A -- EU
S991
MAIN SWITCH
C901 .22μ AC250V
L901
C902 .47μ
C923 M-4700 AC250V
C924 M-4700 -- EU M-3300 -- US AC250V
T901 D081-259
R65 10 1W
C67 630V
D01 RBV408
C903 VA1 2200P
C904 VA1 2200P
R01 100K 1W MB
R02 100K 1W MB
C01 200V 680μ
C02 200V 680μ
R03 120K 1W MB
R04 120K 1W MB
C03 630V .047 PP
R06 47K 3W MB
C04 2KV B-220P
D02 RG1C
C05 10V 470μ
Q02 2SC2655-Y MAIN-REG PROTECT
D03 EU02
R10 .47 2W MB
C06 .0047 MF
R09 4.7K
R12 .68 3W MB
R08 100 2W MB
R07 100 2W MB
IC01 STK7309
MAIN SW.-REG
R19 10 2W MB
C10 2KV R1000P
R17 47
R43 10
C36
D38
D41
24.3V
7.5V
24.5V
21.1V
20.4V
20.4V
404V
14.15
24.3V
20.4V
18.7V
24.3V
24.5V
R13 10K
24V ADJ
VR01 B-100K
R14 18K
C08 50V 47μ
R15 39
R16 47
D04 EU02
C07 50V 10μ
C09 50V .47μ
K01 DG1U24VDC
R18 8.2 10W
K901 DG1U5VDC
D48 EM-01Z
POWER-RE
T902 D081~263


6
7
8
9
10
UNIT
PRINTER-UNI
R31 150 10W CE
PE
IC35 78M20
+20V REG
20V
C55 35V 33μ
TP23
TP21
D30 D10LCA20 ESAC92M-02
T901 D081-259
L30 2.2μH
R32 .24 1W MB
Q32 2SA1265 +22V-OUT
R33 .3 1W MB
Q33 2SA1382 +22V DRIVE
R35 220
R36 5.6K
R65 10 1W
C67 630V 4700P PP
C30 35V 3300μ
C31 35V 3300μ
D31 HZ33-2
D32 1S2076A /1S2471
C32 50V 10μ
R34 1K
R30 220
D33 D34 D35 D36
D33 ~ D36 1S2076A /1S2471
R37 1.8K
C33 B-2200P
R66 10K
R40 22K
R41 68K
C35 35V 2200μ
R45 3.3K 1/2W ©
27.5V
27.5V
0V
Q31 2SA1115 OVER-LOAD-DET
C69 50V 10μ
IC30 M5236L +22V REG
R38 15K
D37 1S2076A /1S2471
22V ADJ
VR30 B-2K
R44 3.3K
TPC
HEAD
22V
PH
THERMAL-HEAD
DIGITAL
Q35 2SC2603 +22V-ON/OFF
R47 4.7K
R46 47K
C38 Z-.01
D38 ERC90M-02 D4LA20
L31 4.7μH
C39 25V 1000μ
C40 25V 1000μ
IC31 RQ12R
+12V REG1
12V
C41 25V 470μ
D39 HZ12C
D40 1S2076A /1S2471
R43 10
C36 R-2200P 2KV
IC32 RQ12R
+12V REG2
12V .3A
C43 25V 470μ
5V
12V
20V
-30V
PD
PWB-MOTHER
PD
D41 ERC90M-02 D4LA20
L22 4.7μH
C45 10V 1000μ
C46 10V 1000μ
IC33 SI 3052V
+5V REG
5V 1A
C47 10V 1000μ
D42 HZ6C2
D43 1S2076A /1S2471
D44 RL22
L33 4.7μH
C49 25V 47μ
C50 25V 47μ
IC34 79M12
-12V REG
-12V .1A
C51 25V 47μ
D45 EL1Z
L34 22μH
R48 430 3W MB
C53 100V 10μ
C54 100V 10μ
-30V 10mA
Q40 2SC2603 PROTECT-AMP
C56 50V 10μ
D55 HZ11CP
D56 HZ11CP
D57 HZ11CP
D50 1S2076A /1S2471
R57 1K
R58 10K
R55 33
C57 10μ
5V
0V
0V
ANALOG
12V
-12V
HEAD ON
POWER ON
POWER ON/OFF
PA
PWB-MOTHER
PA
R53 1K
C60 Z-.01
C63 Z-.01
IC37 74KS112
POWER REMOTE
VCC RESET
CLK K J SET Q Q̄ GND
5V 5V 0V 0V 0V 0V 0V
5V 5V 5V 5V 169V 0V
Q36 2SC2603 POWER-RELAY-DRIVE2
R50 1K
R49 22K
Q37 2SA1115 POWER-RELAY-DRIVE1
R52 10K
R51 10K
D49 1S2076A /1S2471
R54 10K
D48 EM-01Z
VDC
D51 1S2076A /1S2471
R56 10K
C61 50V 10μ
R61 470
R59 10K
R60 10K
R62 22K
R63 22K
C62 50V 1μ
Q38 2SC2603 ON/OFF AMP2
R64 100
Q39 2SC2603 ON/OFF AMP1
D47 S1WB(A)
IC36 78M05
C58 25V 1000μ
C59 16V 100μ
R68 1K
MS
MI
SM
Ā A


9
10
PRINTER-UNIT
REG
HEAD
22V
PH
THERMAL-HEAD
R45
3.3K
1/2W
TPG
DIGITAL
5V
12V
20V
-30V
PD
PWB-MOTHER
PD
ANALOG
12V
-12V
HEAD ON
POWER ON
POWER ON/OFF
PA
PWB-MOTHER
PA
R61
470
R62
22K
C62
50V
1μ
Q39
2SC2603
ON/OFF AMP1
MS-PCB
MS
C1
10V
220μF
R1
3.3KΩ
PC1
GPIL04
HEAD,ROLLER
POSITION SENSOR
R2
3.3KΩ
PC2
GPIL04
HEAD,ROLLER
POSITION SENSOR
R3
180Ω
VR1
B-50K
R5
33KΩ
PS1
PS1-PCB
PAPER
SENSOR1
PC3
GP2S05K
R4
180Ω
VR2
B-50KΩ
R6
33KΩ
PS2
PAPER
SENSOR2
PC4
GP2S05K
PS2-PCB
DH
DEW CONDENSATION
SENSOR
CS
CONNECTOR FOR CUTTER POSITION
SENSOR
R8
180Ω
VR3
B-50KΩ
R7
33K
PS3
PAPER JAM
SENSOR
PC5
GP2S05K
PS3-PCB
MI
A
Ā
B
B̄
SM
STEPPING MOTOR
FOR PAPER FEEDING
M3
+
−
DM3
HEAD UP/DOWN MOTOR